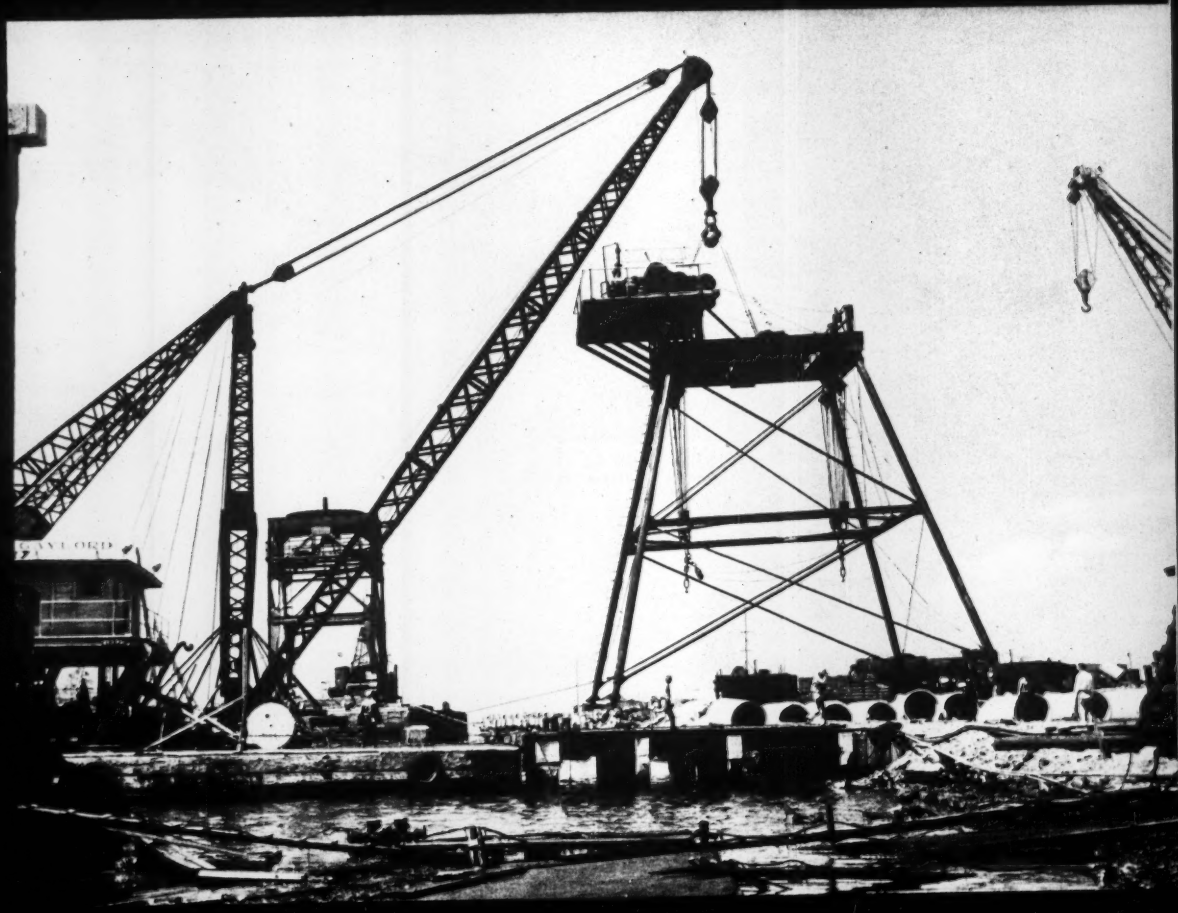
ENGINEERING NEWS-RECORD



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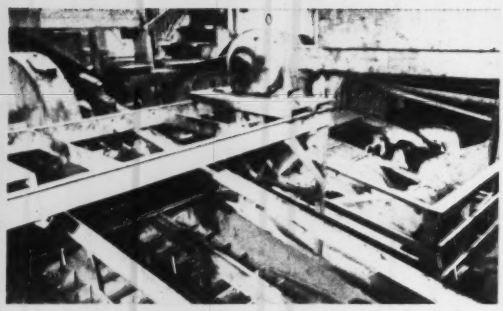
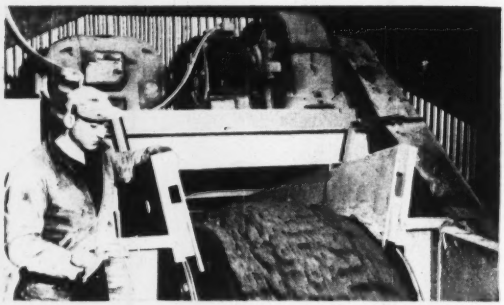
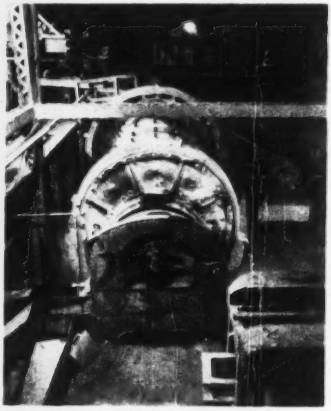


Aggregate under 6 inches is separated in shakers at screening plant. A G-E 5-hp motor drives shakers. Plant is completely automatic.



Carrying cement mix along this indoor conveyor system is a crucial step in construction of the dam. Sturdy G-E 100-hp motor drives the belt.

Aggregate for batching plant at Hungry Horse Dam is carried 1600 feet up the canyon wall by conveyor, driven by reliable G-E 100-hp motors in wooden sheds at intervals of 250 to 300 feet.



This Marcy rod mill, used in the gravel-crushing operation at the screening plant, is driven by a G-E 200-hp motor (right center). The motor is protected against heavy dust.

push-button aggregate processing at 700 tons/hr.

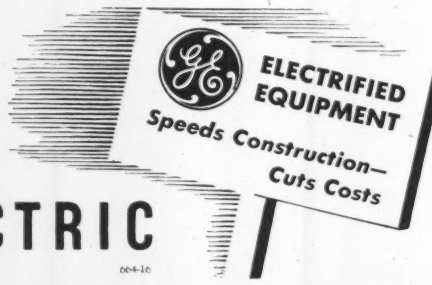
. . . Electrically

General-Shea-Morrison, contractors for the Bureau of Reclamation's Hungry Horse Dam, are going all-out with electric equipment. Best example is their aggregate plant with its network of interconnecting conveyors geared to process 700 tons of raw aggregate every hour. It's one of the most modern installations of its kind in the country—strictly a push-button operation from raw aggregate handling to mixing. Only with modern electric drives can this world's fourth largest dam be completed on schedule in 1952.

As time goes on, contractors are discovering more and more that it pays to electrify. With co-ordinated use of G-E motors and control and G-E power-distribution systems, they're getting safer, more flexible, and more efficient operation. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

Ask him Today!

Whether you buy or build construction equipment, your G-E representative can show you how to do a better job—at lower cost—by complete electrification. Write him now, and he'll call on you at your convenience.



GENERAL ELECTRIC

664-16

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The only way to determine a wire rope's value is to record the actual work it does . . . in terms of ton-miles, yards of rock moved, cars of coal hauled, etc. We'd like to have you keep such records on Bethlehem rope and any competitive ropes you may be using. Make a regular practice of it, so that you'll *know* how much each rope has done before it's scrapped.

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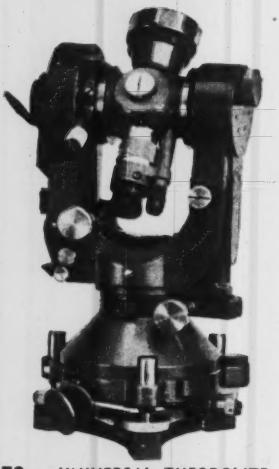

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ENGINEERING NEWS-RECORD

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Volume 146 — MAY 17, 1951 — No. 20

WALDO G. BOWMAN
Editor

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ROBERT F. HOGER
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The lightest standard heavy-duty truck mixer on the market!

5485 lbs. WEIGHT OF 3-CU. YD. HI-BOY

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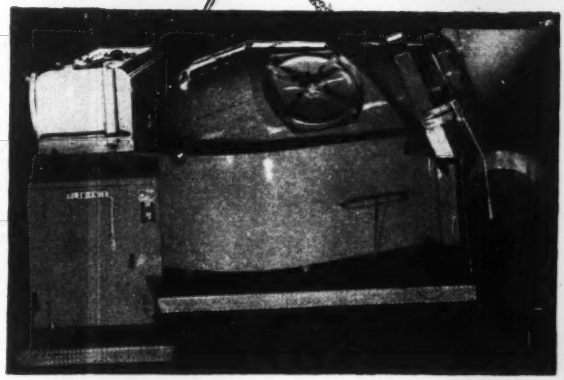
Both weights include complete 2-compartment water measuring tank.

(Ninety pounds deducted from scale reading for lifting slings.)



BY careful redesign, the weight of the 3-yd. Hi-Boy Trukmixer has been reduced *by a full ton,* and the 4½-yd. model by a *half ton!* This means the new heavy-duty Blaw-Knox Hi-Boy is the lightest standard complete truck mixer on the market, yet it retains all the sturdy construction and high production features of the original Hi-Boy.

This elimination of dead weight means you can haul rated loads within legal limitations . . . bigger pay loads at lower cost per yard. It means a lower over-all capital investment . . . for example, the new 3-cu. yd. Hi-Boy can be mounted on a single rear axle chassis of proper wheel base capable of carrying 18,000 lbs. total load, without exceeding legal limitations for weight on rear axle.

In addition, you get all the other 25 high-profit features that make the Hi-Boy Trukmixer first choice on so many jobs that call for big production at low cost. Ask your Blaw-Knox distributor for complete information.

THE EXCLUSIVE REVOLVING HOPPER with the GUARANTEED SEAL

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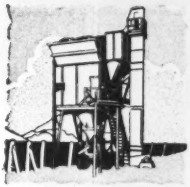
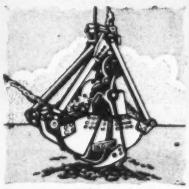
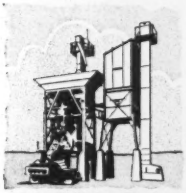


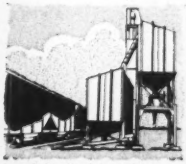
Truck Mixer Loading Plants



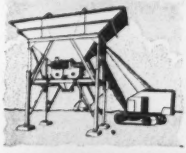
Clamshell Buckets



Central Mixing Plants



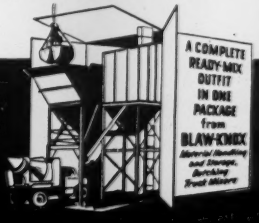
Bulk Cement Plants



Aggregate Batching Plants

DON'T OVERLOOK THE PROFIT POTENTIAL OF THE BLAW-KNOX *Complete* READY-MIX PACKAGE

Now you can get *all* your ready-mix equipment in one "Complete Package" . . . clamshell buckets, central mixing plants, batching and charging plants and Hi-Boy Trukmixers . . . all on one order, in one shipment and covered by one financial arrangement. You have one competent distributor source for expert repair and maintenance service, and one source for replacement parts. The field performance of your equipment is backed by one undivided responsibility. Ask your nearest Blaw-Knox distributor to explain every benefit of the "Complete Ready-Mix Package."



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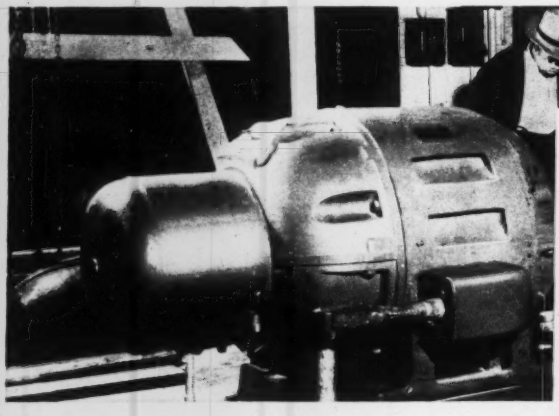
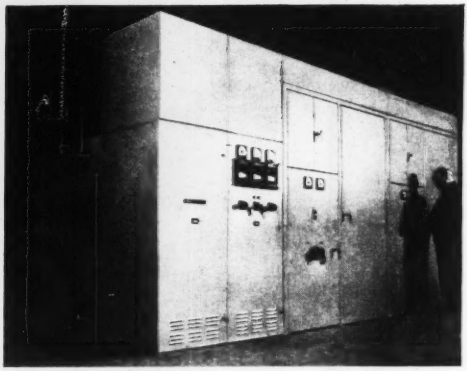
DEPENDABILITY where it counts

SYNCHRONOUS MOTORS

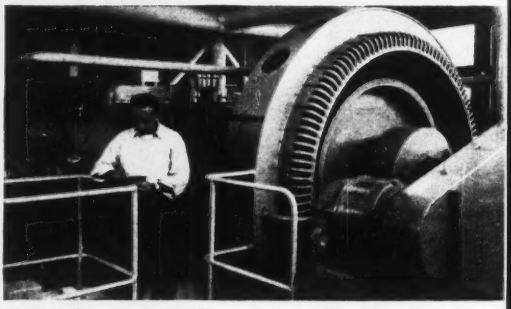




Dependability and long life are a must in water-pumping equipment. Cohoes, N. Y. selected a G-E Tri-Clad* 500-hp synchronous motor for their raw-water pumping station. And as protection against a short-circuit capacity of 60,000 kva, Cohoes selected G-E Limitamp high-voltage control. Besides providing accurate control for the motor, Limitamp clears shorts from the line in less than half a cycle—before damage can come to either motor or control. Ask your nearest G-E sales office for more information on Limitamp control.

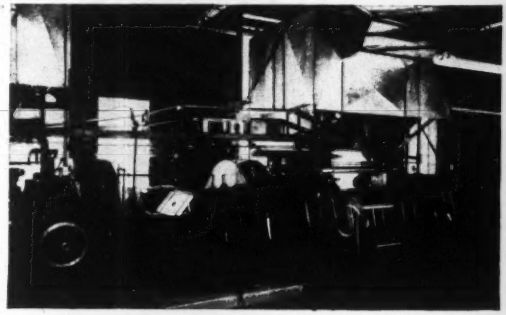
* Reg. U. S. Pat. Off.

ON CRITICAL PUMPING OPERATIONS

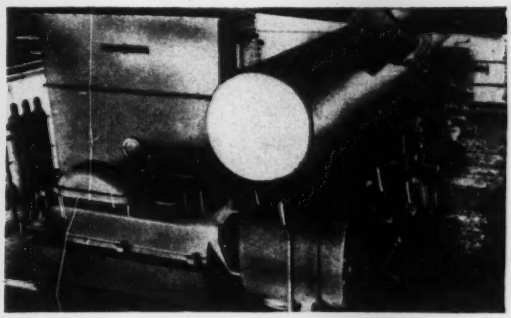


Driving compressors in gas pumping station serving hundreds of homes, motor requirements were—dependability and low cost. This G-E 1500-hp synchronous motor scores on both counts.

FOR SPECIAL SERVICE CONDITIONS

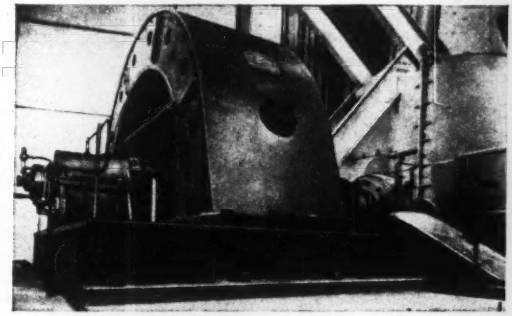


Corrosive, dust-laden atmosphere has no effect on this externally ventilated synchronous motor. Installed in a plastics mill, it's typical of the special enclosures that can be designed to meet almost any operating problem.

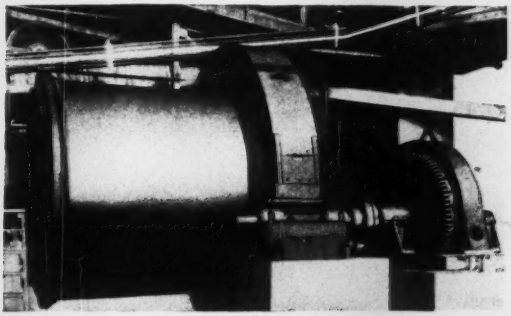


These gas compressors created a hazardous atmosphere for motor operation. The external enclosure of this 300-hp, G-E synchronous motor is filled with an inert gas to provide reliable operation.

FOR TOUGH JOBS



A motor must be rugged to drive a large wood chipper capable of chewing 40-inch diameter logs into small pieces. This G-E synchronous motor, with rigid, box-type construction will give years of dependable service—on a *tough* application.



To meet the rough test of driving a ball mill, this mining company chose a G-E high-torque synchronous motor rated at 600 hp. It's given them years of dependable operation and still going strong.

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It's a fact . . .

Lower Operating Costs,
higher operating efficiency.

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including control and exciter—for many ratings.

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Application engineers, with many years of field experience, will tailor G-E synchronous motors and control to *your* job. And, no matter where you are located, there's a G-E Service Shop near you.

For your next large, synchronous motor application, call in your General Electric representative—he'll be glad to discuss with you, your particular application. For more information on G-E synchronous motors, write for GEA-5332 (low-speed) or GEA-5426 (High-speed) to: *Section 770-24, General Electric Company, Schenectady 5, New York.*

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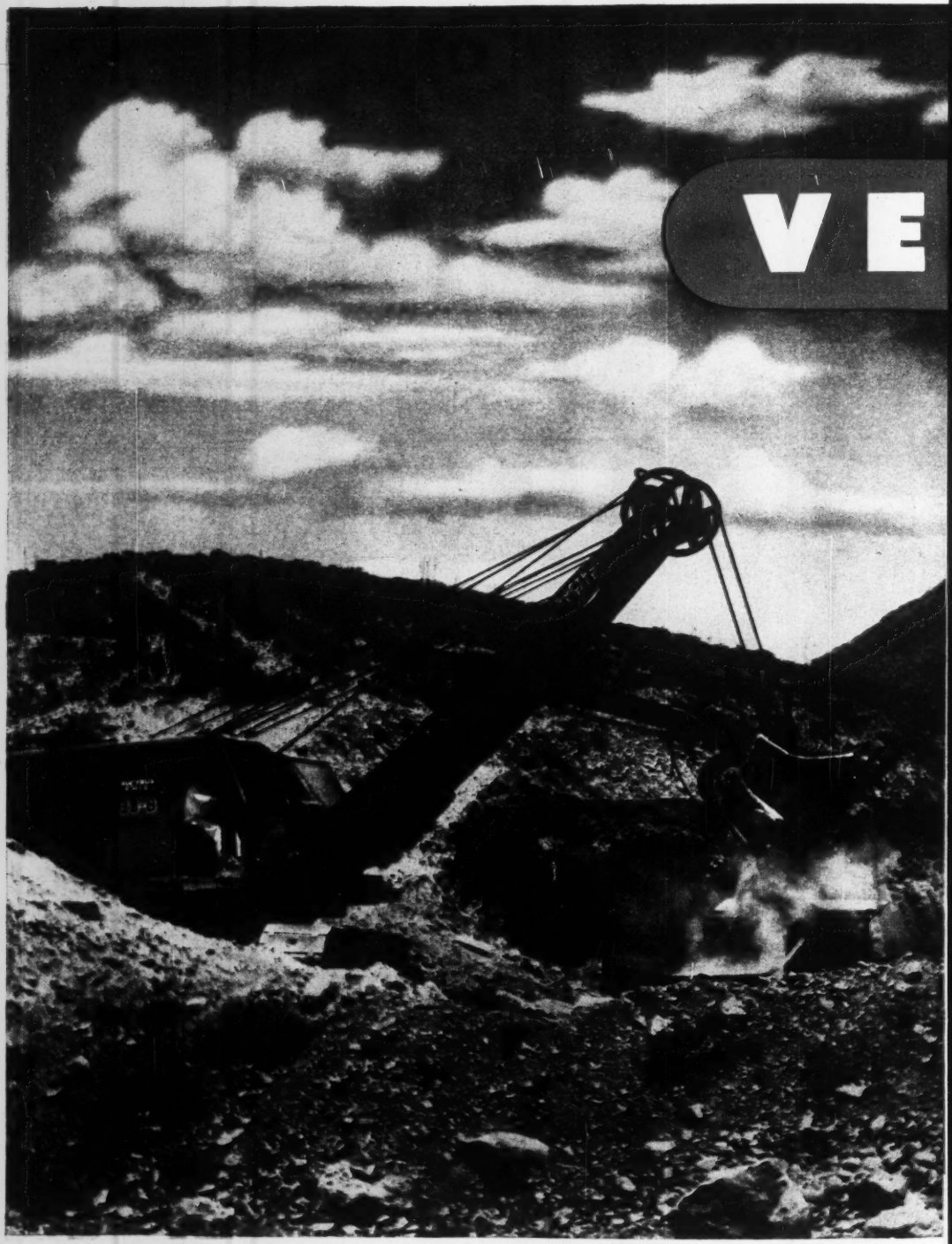
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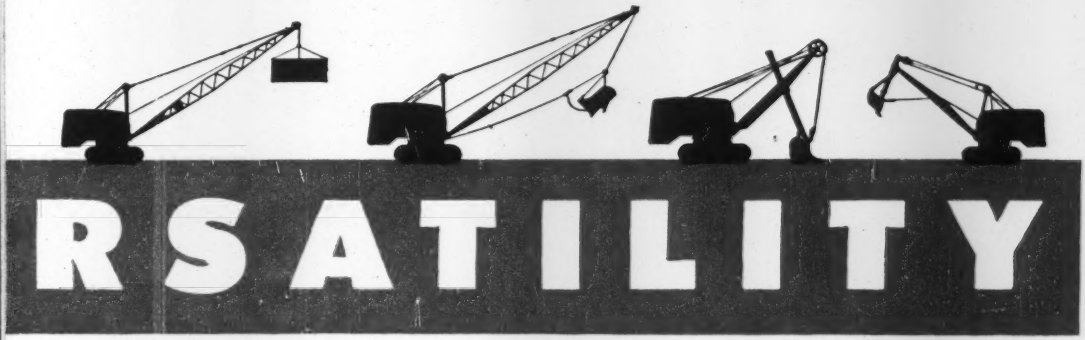

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Take the 1½-yard Bucyrus-Erie 38-B as an example. Its wide-spread mounting and ground gripping treads mean superior stability for fast crane, dragline, shovel or dragshovel service. Its compactly designed, easily accessible main machinery makes conversion simple, facilitates maintenance. Large, high-capacity clutches and brakes meet all demands of excavator and crane service, feature easy-to-make, long-lasting adjustments. "Full-feel" controls mean fast, accurate operation, the operator always in touch with the load.

These and many other features combine to provide the versatility of the 38-B and other machines in Bucyrus-Erie's outstanding ⅜- to 4-cubic yard line of gasoline, diesel and single-motor electric excavators. Top-notch performance with any front-end equipment is one more reason why Bucyrus-Eries are

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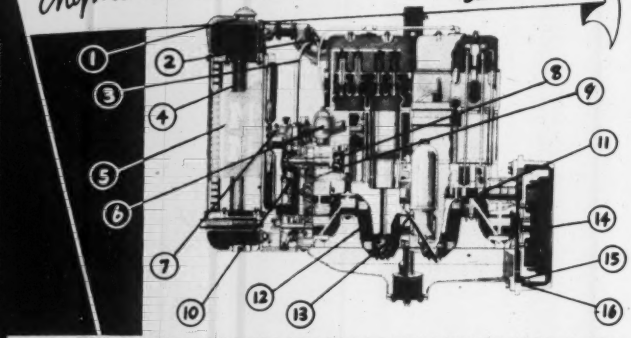

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NEWS BRIEFS

Sounds political—Tennessee is making it easier for New Dealers to visit White House folks. This is proved by the fact that the state highway department is improving 4.8 mi of road between the Sumner County towns of White House and New Deal.

Sodium fluoride—San Francisco will be the first California city to add sodium fluoride to its water, starting next August. The plan is for two plants, at its San Andreas reservoir and Alemany pumping station, to use dry feed gravimetric equipment at a cost of $40,000. The estimated annual operating cost is $25,000 per year. Sodium silicofluoride will be used in a dosage of 13.9 per million gallons. About 42 mgd will be treated, practically all of which goes to residential areas. This means that two-thirds of the population of the city will be getting water containing 1 ppm of fluoride.

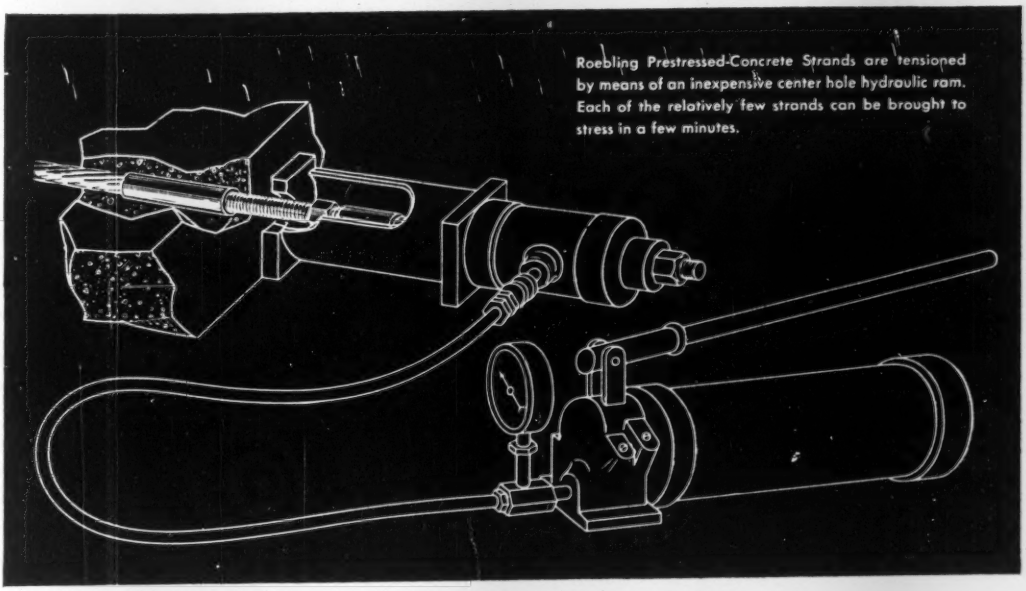
The only way crime pays—Inmates at the London, Ohio, prison farm are saving the state $100,000 in labor costs on a new prison sewage disposal plant. Nineteen prisoners are assigned to construction tasks. Competitive bids were received for the new plant, but the lowest was more than $240,000, including labor, $100,000.

Complete clean-up—The last of the communities under jurisdiction of the Interstate Sanitation Commission (N. Y., N. J. and Conn.) got its clean-up orders recently. Upper Nyack, N. Y., (pop. 1,100) became town number 102 to be given a timetable on pollution abatement by the commission. The commission's director and chief engineer, Seth G. Hess, prescribed the schedule after a hearing. A forthcoming commission meeting will make it official.

Pipe line salvage—Salvage and reinstallation at a new site of 40 mi of a 38-year-old oil pipe line is under way in southern California. General Petroleum Corp., which awarded a $2,000,000 contract for the job to Bechtel Corp., explained that current high military requirements for oil in the West—and the scarcity of new steel—made the project feasible. The company anticipates a 98 percent recovery of the 8-in. line, saving about 2650 tons of new steel. The pipeline will stretch from the San Ardo oil field to a marine loading plant at Estero Bay.

(*Continued on page 13*)

PRESTRESSED CONCRETE?...



Roebling Prestressed-Concrete Strands are tensioned by means of an inexpensive center hole hydraulic ram. Each of the relatively few strands can be brought to stress in a few minutes.

AT THE COST OF STEEL?

High labor costs eliminated by Roebling Americanized System

UNTIL RECENTLY, wire for prestressing was cut to length and threaded into cables by iron workers at the building site... a slow, unwieldy operation involving exorbitant labor costs.

All such bother and expense are now eliminated by the Roebling Americanized Prestressed Concrete System. By this system, Roebling furnishes complete factory-made prestretched strand assemblies. They are formed of hot galvanized acid steel prestressed-concrete wire... the only wire that is suitable for this type construction. Attached to these strands are specially designed end terminals ready for the tensioning job, done with an inexpensive jack in a matter of minutes.

The Roebling Americanized System makes Prestressed Concrete even more economical in comparison with other designs. In addition, it removes the guesswork from prestressed concrete design. Materials are proof-loaded. Contact Roebling for full technical data and engineering assistance in planning applications for this extraordinary material. John A. Roebling's Sons Company, Bridge Division, Trenton 2, New Jersey.

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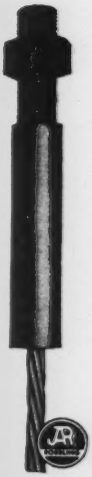
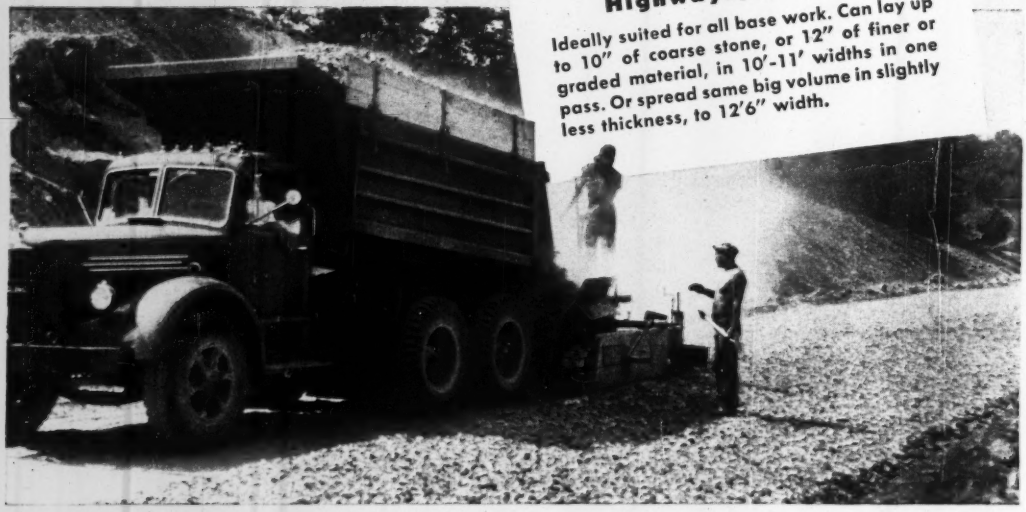


One of the specially designed Roebling Strand fittings that is essential to the Americanized Prestressed Concrete System.

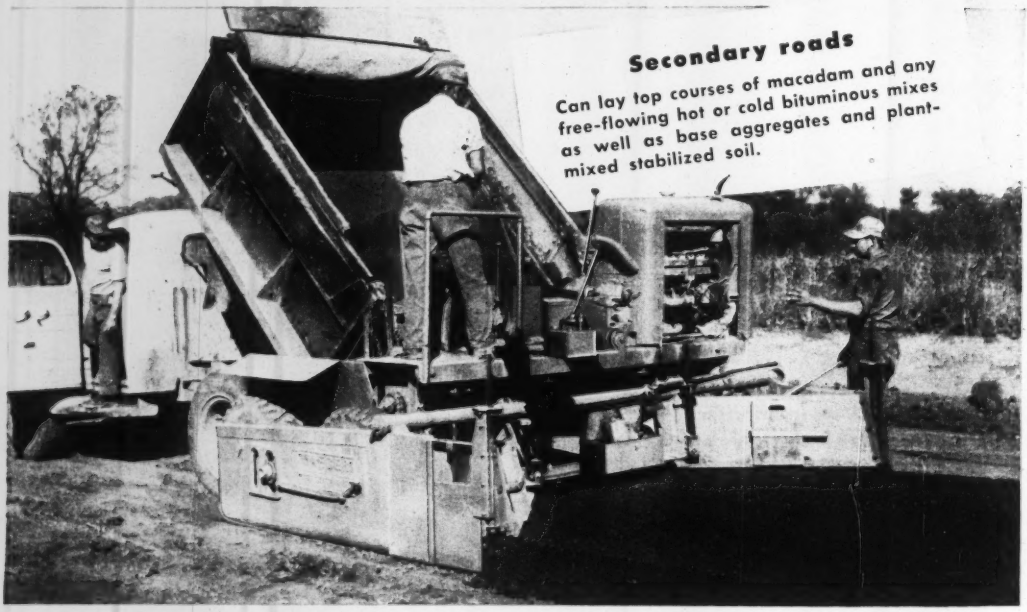
ROEBLING

Today's most useful paving tool... the JAEGER paver-type Aggregate Spreader



Highways, Airports

Ideally suited for all base work. Can lay up to 10" of coarse stone, or 12" of finer or graded material, in 10'-11' widths in one pass. Or spread same big volume in slightly less thickness, to 12'6" width.



Secondary roads

Can lay top courses of macadam and any free-flowing hot or cold bituminous mixes as well as base aggregates and plant-mixed stabilized soil.

Costs ½ the price of bituminous pavers. Accurately lays base and surface aggregates, free-flowing hot or cold bituminous mixes, plant-mixed stabilized soil.

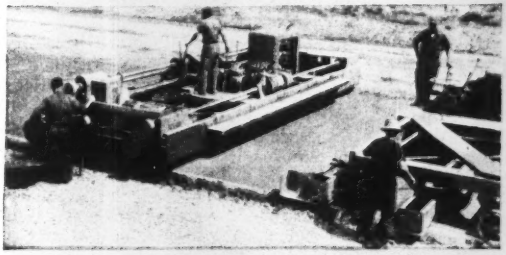
Can lay up to 12" thickness in widths to 11'; slightly less thicknesses to 12'6" width. Two spreaders can lay full 25' width on fast work.

All traction is on the subgrade—No displacement of loose, uncompacted material. Crawler or 4-wheel drive interchangeable to meet any subgrade conditions.

Can lay flush to curbs or headers, blend perfect joints. Two models—to work with any size trucks up to 24-ton semi-trailers.

Small contractors use on parking areas and drives

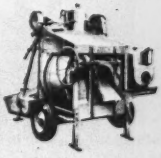
This simple, low-cost spreader does a beautiful job, fast and with big saving in labor. See your Jaeger distributor.



3-Screed "Team" for concrete paving

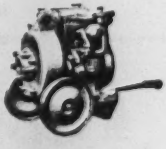
Jaeger Screw-and-Screed Spreader accurately meters the exact amount of material needed for perfect finishing. No carry-back, no excess or deficiency to delay progress or vary compression. Only one Jaeger Finisher needed, even on high production work. On pitched slab and super-elevated curves Jaeger Diagonal Screed Finisher insures solid placement against the higher form. Screw-and-Screed Spreader also adaptable for high type bituminous pavement.

"NEW STANDARD" AIR-PLUS COMPRESSORS
Give you 15% to 25% more air than others, to get more work done with same men and tools. Sizes 75, 125, 185, 250, 365 and 600 cfm.



"SPEEDLINE" CONCRETE, PLASTER, MORTAR MIXERS More batches per hour with fast "Skip Shaker" loaders and thoro-mixing, fastest discharging "Dual Mix" drums. Sizes 3½S to 16S.

"SURE PRIME" DEWATERING AND PRESSURE PUMPS Built oversize for lower speed, longer life operation. 1½" to 10" sizes, capacities to 240,000 gph. Pressure pumps for up to 275 psi.



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MT. VERNON — EXTRA

Gives You Greater Fabric Uniformity

The greater uniformity of Mt. Vernon Extra Duck assures you the two most important qualities you want in tarps —top protection and top wear. You'll find your repair and replacement costs reduced considerably.

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Briefs . . .

Elevator commuting—The business and residential levels of Oregon City, Ore., are separated by a 110-ft cliff. The Housing and Home Finance Agency is making an interest-free advance for planning a passenger elevator to make it easier for citizens to pass from one level to the other.

Pentagon a good investment—The cost of the Pentagon at Arlington, Va., opposite Washington, was about $65,000,000, but since it brought together Army personnel which had been scattered in 17 buildings mostly rented, the vast building is said to have paid for itself in the rental savings. It is also reported that the government gets enough cash from the waste paper collected in the building to pay the salaries of several of the leading officials there.

Sidewalk problem—Would you help pay for a sidewalk in front of someone else's house, a sidewalk your children would use in going to school? That's the question being asked parents of children attending the George Washington grade school in Marion, Ohio. About 489 parents petitioned for a sidewalk along Indiana Avenue, but property owners objected, citing high costs. However, one Indiana Avenue landowner said that if the parents wanted the sidewalk, they could prove it by helping to pay for it, at an estimated $2 a front foot. The total cost would be between $6,000 and $7,000. Now the Parent-Teachers' Association has been given a month to get pledges for half the amount needed.

Million dollars too high—Michigan state officials said they were worried over the future of the state's multi-million dollar construction program, after bids on a proposed medical building for Wayne University ran far over estimates. A year ago, the anticipated cost was $8,800,000, complete with furnishings and equipment. Now actual bids totalled $3,800,000 for the buildings alone.

And now, flural—Fluorides up to 1.5 ppm in water supply are beneficial, prevent tooth decay. In greater concentration they cause mottled teeth. At the recent American Chemical Society meeting in Cleveland use of flural (an alum-and-flurine compound) was proposed with the claim that it would neither cause nor permit concentrations over the 1.5 ppm safety limit.

Expanding Again . . . with Quonsets! *Successful experience with this large Quonset plant at Delaware, Ohio, has prompted Ranco, Inc., manufacturers of thermostatic controls, to build a new Quonset plant at Plain City, Ohio.*

Build Quicker with QUONSETS

IDEAL FOR FACTORIES, WAREHOUSES MACHINE SHOPS OR STORAGE BUILDINGS

For additions to your present plant—or for new plants—Quonsets mean *fast* completion, economy of materials, adaptability to *any* use. Also, should plants need more expansion later, you can add Quonset to Quonset, according to the need.

Made of N-A-X HIGH-TENSILE steel, Quonsets provide non-combustible construction and permanence far surpassing less modern buildings. They require little upkeep—are easily maintained. Let Quonsets serve you now. Write us today.

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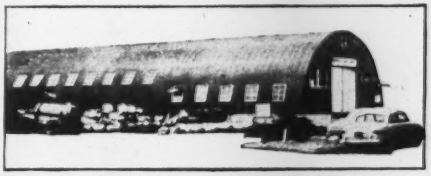
GREAT LAKES STEEL CORPORATION
Stran-Steel Division, Ecorse, Detroit 29, Mich.

PRODUCER OF N-A-X HIGH-TENSILE STEEL



Expansion Completed in 32 Days! *Quonset 40 by 240 feet increased facilities quickly for General Gas Corporation Baton Rouge, La.*

NATIONAL STEEL CORPORATION

Barber-

NEW *Runabout*

MODEL 705A WITH FINGER-TIP HYDRAULIC

Lowest Cost per Foot of Trench, All Ground, All Weather

The Model 705A Runabout—widely preferred by contractors, gas, telephone, water and power companies for service trenching—now presents the Hydra-Crowd which gives the Runabout an infinite range of digging speeds between 0 and 16 feet per minute, independent of the bucket line speed.

Hydra-Crowd—hydraulic transmission of power to the driving wheels—allows the operator to coordinate the crowding and bucket line speeds, balancing the two functions to get maximum digging efficiency. It makes the Runabout truly an all-ground, all-weather ditcher. For every digging condition, with the Hydra-Crowd the Runabout offers the proper combination of bucket line speed and forward speed—instantly. With a twist of the wrist the operator keeps the Runabout going at top digging efficiency through varying soil conditions—no gear shifting.

Thus—more than ever—the Runabout, with its 15 m.p.h. road speed and Vertical Boom "Milling Action," combines mobility and digging efficiency to make possible lowest cost per foot of trench in all conditions the year around.

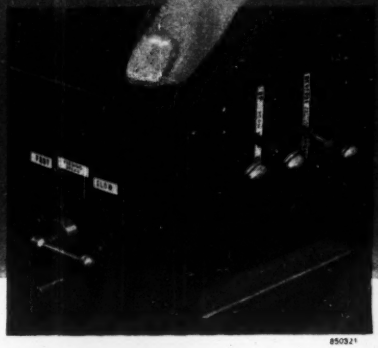
see your B-G distributor

Greene

SERVICE DITCHER

HYDRA-CROWD

CONTROL OF CROWDING SPEED



INDEPENDENT OF BUCKET LINE SPEED

Runabout Features Mean Outstanding Performance

One-man operation.
Control of digging from cab or ground.
Finger-tip controlled hydraulic hoist for Vertical Boom.
15 mile-an-hour road speed.
Fast digging speeds under all conditions—in everything from loamy soil to hard coral rock.
5½"—7½"—or 10½" cutting widths down to 48" deep.
Digs clean trench—no ramp to be dug out by hand.
Hydraulic backfill blade available.
Instant stop, quick reverse.
Designed from engine to bucket line for ditcher service.
Special high traction differential.
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Year around operation.

Underground piping and wiring for:

Cities • contractors • parks • cemeteries • electrical contractors • telephone companies • golf courses • athletic fields • outdoor theaters • driving ranges • railway signaling departments • homes and garages • electrical utilities • street lighting • playgrounds • gas companies • electric and telephone conduits • railroad drainage • building foundations • concrete footings • septic tank drainage • farm water supply and drainage • plumbers • highway drainage.

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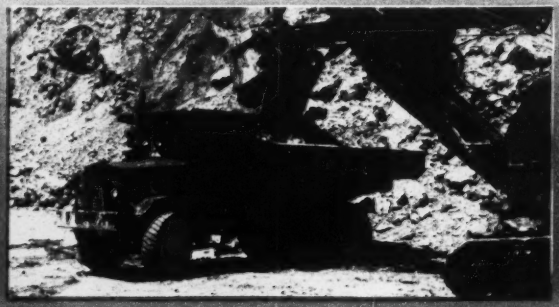
For assistance with your off-the-highway hauling problems and Euclid performance data on work similar to yours, get in touch with your Euclid Distributor . . . or write direct if you prefer.

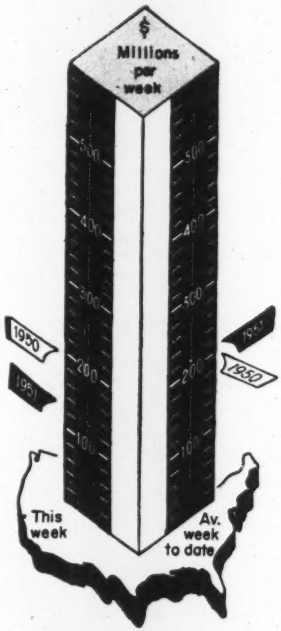


The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

CABLE ADDRESS: YUKLID — CODE: BENTLEY

EUCLIDS *Move the Earth*

THE CONSTRUCTION WEEK



Amount of contracts let

	Week of May 17, '51	—Cumulative, 20 wks.— 1951	1950	% chge
Federal	$31.8	$858.1	$542.1	+58
State & Mun.	45.2	1,382.7	1,231.6	+12
Total Public.	$77.0	$2,240.8	$1,773.7	+26
Total Private	74.8	3,474.2	2,346.5	+48
U. S. Total....	**$151.8**	**$5,715.0**	**$4,120.2**	**+39**

(Other figures of the week and ENR Index numbers, p. 89. Note: Figures given here are for four-day period May 9, 10, 11 and 14, due to printing emergency.)

CANADA MAY GO IT ALONE – Serious electric power shortages in Ontario may have served to upset the patience of Canadians in waiting while the U. S. makes up its mind about the St. Lawrence Seaway and power development. Despite international complications, there is serious talk in the Dominion about proceeding with power development without U. S. participation.

MICHIGAN MEANS BUSINESS – A bill passed in Michigan provides penalties for overloading of trucks on the highways ranging from two to ten cents for each lb overweight, plus a possible $500 fine. Vehicles can be impounded until fine is paid – and sold if payment is not made in 90 days.

GAS LONG, STEEL SHORT – Although there are trillions of cu ft of natural gas available to help fuel the nation's industries and homes, pipeline officials are concerned over the reduced production of large-diameter steel pipe. Present indications are that only two-thirds of the line pipe needed will be produced.

UNION SHOP WINS – By a unanimous vote (39-0) employees of the Plumbing and Heating Contractors Association of Olean, N. Y., have authorized the AFL Plumbers & Steamfitters Union to seek a union shop. It was first time in three years that the National Labor Relations Board has conducted such an election in the construction industry. (Almost exactly three years ago NLRB held a similar election in western Pennsylvania for roadbuilders, then abandoned the elections because the industry was considered too fluid). Watched carefully by construction men, the election followed a 398-9 vote in favor of the plumbers union at Baltimore (See p. 68 of this issue for this and other labor news).

NO FLUORIDE FOR S. F. TEETH – Acting hastily under the unexpectedly strong attack of special groups – including the Christian Science Church – San Francisco supervisors reversed an earlier decision on adding sodium fluoride to the city's water supply, voted instead to put the question up to voters in November. Scientists call the proposal mass medication, but say they would have no objections – if they can get un-fluorided water from city mains.

NO YOU DON'T – If anybody (specifically the Bureau of Reclamation) wants to divert water from Oregon to California, they'll do it only over the bodies of that state's legislators, according to a new Oregon law. Aimed at preventing diversion of water from the Klamath, Rogue and Umpqua rivers to northern California once proposed by Reclamation, the law provides that the state legislature must approve any diversion out of the state.

SHELTER SLASH – Federal aid for bomb-proof shelter construction was eliminated entirely last week by the Senate in a vote on a supplemental appropriation bill. The administration had asked for $250 million; the House cut the request to $75 million, and the Senate recommended nothing. A floor vote sustained committee judgment. Reason: Senators oppose a "blank check" for an undefined program.

TV HELPS HIGHWAY PROMOTION – Governor Earl Warren of California recently discussed his state's highway problems and proposals on a television broadcast from San Francisco. He used graphic maps and charts to illustrate his video presentation.

The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

Niagara's Mysteries Solved

The first accurate survey of the Niagara River bed, from its source at Lake Erie to a point below Niagara Falls, has been completed by the Buffalo District, U. S. Army Corps of Engineers. Basis for a scale model (1-360) of the Falls and River, built at Vicksburg, Miss., for study of remedial work on the Falls, the profile employed almost every known sounding method—and several brand-new ones.

Surveying the Upper Rapids above the crest of the Falls, where current runs 15 to 20 mph, was the major hazard. Earlier efforts to chart these waters proved inaccurate; and many suggestions were discarded before the Engineers thought of using a "flying platform."

Flying over the spot to be sounded, a Bell helicopter reeled out 1500 to 2000 feet of steel wire line through pulleys. An orange pennant, attached 30 feet above a saucer-shaped lead weight, was the target. The helicopter dropped straight down until the weight hit the bottom of the river. Line slackened, and then was pulled taut by a light counterweight. The pilot radioed, "Target!", to four ground watching parties, who shot the pennant on their transits; obtained information for computing elevations. As many as 77 readings were made in one day, with the helicopter flying back and forth in paths 300 feet apart.

Kytoons (helium-filled balloons) were also used where the channel was narrow or high trees lined the shore; and for finding elevation from the crest of the Falls to the waters below. Two kytoons, 8 feet long, 4 feet wide, were lashed together, with a third riding above the center. This gave enough lift to support a weighted sounding line, threaded through a pulley on the underside of the kytoon. One man maneuvered the captive kytoons; another manipulated the sounding line. Transitmen, signaled by walkie-talkie, placed the weight at the exact spot on the river bottom.

Gurley on the Team

"This survey was made possible by good teamwork," says Everett Becker, Civil Engineer attached to the Corps of Engineers. "I've been using Gurleys ever since I learned to use a transit; was glad to have Gurley on the team."

You may never have to chart the floor of a river or measure the height of Niagara Falls. But you, too, will find a Gurley Transit a valuable member of *your* surveying team. Bulletin 50 gives all details.

SURVEYORS: Send in an unusual field experience for this series. We also welcome your comments and suggestions.

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CONSTRUCTION TRENDS

INFLATION SLACKENS; BUYERS' PRESSURE SEEN LATER IN YEAR

Fast pace of the Korea War–inspired inflation recently slackened. Most wholesale and raw material prices stopped rising, and some fell for the first time in months. The consumers price index almost leveled off in March and April. The cost of living even dropped a little in some areas.

At present, pressure on prices is slight. Consumers can get all they want of most goods–shortages have not hurt production of civilian goods much. The military is taking only about half of what it will get at the peak of mobilization.

But by fall, economists expect a big increase in inflationary pressures. Military spending will be rising fast. The government–which has been running a surplus–will be going into debt at a rapid rate by December. Civilians will be bidding for a falling supply of consumers goods.

All this is expected to generate more inflationary pressure this fall and winter. The government will try to control inflation. But no one knows how well controls will work.

THE LULL–The pace of inflation began to let up early this year. The big rise in wholesale prices–16% in about seven months–slowed down to only a .5% rise for the next 2½ months. The index of consumers prices almost leveled off in March and April, after rising 8% in eight months.

Industry gets most of the credit for slowing inflation. Business turned out goods at a high rate, gave consumers plenty to buy with their rising incomes. The TV industry, for instance, made sets at an annual rate of about 8 million–in spite of shortages of critical cobalt, copper and aluminum.

Government helped, by running a surplus. But the biggest part of the surplus came in the first quarter. Starting with April, government began to spend more than it took in through taxes, thus adding to the pressure for inflation.

Controls–on prices, wages, credit, construction–may have helped some. Regulation "X" is finally cutting into housing starts, and Regulation "W" gets some of the credit for the recent drop in sales of consumers durables. But most early controls were weak, haven't really taken hold yet.

The lull in inflation should last into this summer. Some prices may rise a little, as manufacturers allow for increased costs. But increases may be more than balanced by roll-backs under the recent control order for manufactured goods.

TROUBLE THIS FALL–Later this year–in the late summer and fall–pressures will again be building up under prices.

Military spending is still small, compared to what it will be next winter. By December, spending for defense is expected to reach an annual rate of about $50 billion. Almost four times the rate in December, 1950.

The jump in military spending will turn the government surplus into a big deficit–it may reach $1 billion a month by year's end. Congress will cover part of the deficit with new taxes. But most of the rest will be added to the already bulging incomes of consumers, make the pressure for price increases greater.

This year consumers want to buy just as many durable goods–except autos–as last year, according to a survey of the Federal Reserve Board. But later this year the goods won't be there to buy–production of TV sets may be off 35% from first quarter rates, major appliances 20%-25%, autos 25%. So consumers will be bidding for the falling supply of goods.

WILL CONTROLS WORK?–Once pressures build up, the size of the inflation depends on how government controls work.

So far, controls haven't worked too well. Terms of the first important wage order, limiting increases to 10% over January 15, 1950 levels, were quickly eased by union pressure. Early price orders were weak. Housing starts went right on at high levels, long after controls were put on mortgage credit.

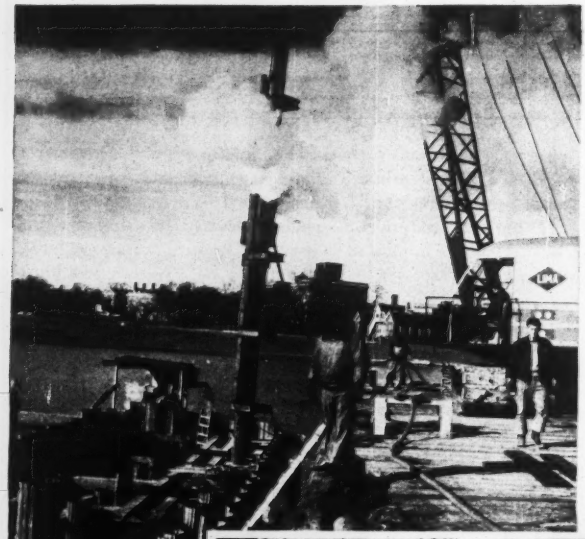
But recently, controls have begun to look more effective. Housing starts fell well below last year's level in March, as contractors began to run out of pre-Regulation "X" jobs. Controls on consumer credit helped cut sales of television sets, may have contributed to the April drop in department store sales. And the government began to issue tougher price orders–like the rules on meat and prices of manufactured goods.

Perhaps the most important control order is the one on meat. More and more wage contracts have cost-of-living escalator clauses–and food is the biggest item in the cost of living index. Price boss Mike DiSalle says that a big rise in meat prices could make "the whole economic stabilization program go by the board."

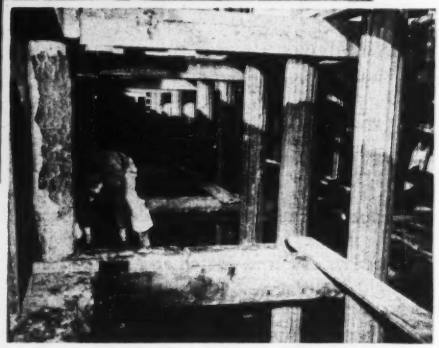
If the cost of living gets out of hand, the entire structure of controls will be weakened. Manufacturers can't hold the price line if their wage costs keep upping.

But–even if controls do work–prices are bound to rise this fall and winter. Pressures will be too great. The hope in Washington is that these increases can be kept as small as possible. The outlook now is for a slow but steady increase in prices, beginning sometime in late summer or fall, continuing well into 1952.

Fast simplified driving of 70-foot Monotube Piles for pier under Boston side of Eliot Bridge.



No danger to this cofferdam



Note excellent alignment of Monotube piles. Extremely close tolerances alongside bracing and sheet piling made it imperative that there be no "walking" or lateral movement under hard driving.

PICTURED here is another difficult bridge-building job where Monotube Piles helped by greatly simplifying the problems of water work. The job is the Eliot Bridge, Cambridge, Massachusetts. It is to be a beautiful 3-span bridge, 418 feet in over-all length, 83 feet wide. It will have two 30-foot roadways, separated by a 4-foot median strip, with 8-foot sidewalks.

Following construction of the cofferdams, the 70-ft. Monotube Steel Piles were driven safely, swiftly and smoothly—78 for each pier. Neither the hazards of water, nor the blue clay—sand—gravel river bed, were problems for the Monotubes . . . as evidenced by easy, top-to-bottom inspection after driving.

You can't afford to disturb the bracing or the alignment on a cofferdam as large as this. The *light,* sturdy Monotubes were safely placed in templates nailed to the cofferdam bracing. They were then driven to their high bearing loads without any fear of "walking" which might easily result in excessive deflection of the bracing, or even the cofferdam itself.

Monotube piles have extra advantages that can help reduce foundation costs while simplifying sound construction from start to finish. Monotubes are available in lengths, gauges, sizes and tapers to meet varying soil conditions. For complete information, write The Union Metal Manufacturing Company, Canton 5, Ohio.

UNION METAL

Monotube Foundation Piles

Fraud by engineers

IN THE "Notes on Legal Decisions" in the May 3, 1951 issue, p. 40, an item headed as above should have been read by every engineer who has anything to do with construction contracts. In the case reported, the engineer undertook to use the broad powers that most construction contracts vest in him in order to limit the amount paid to the contractor for gunite work to that given in his own preliminary estimates. The actual amount of guniting done by the contractor had been over twice that amount. Also, the contract stated specifically that "the engineer's estimate of quantities as shown on the plans is approximate only."

The judge who overruled the engineer's action minced no words. He said that "Non-approval by the defendant's engineer of gunite repair work completed within the provisions of the plans and specifications, without evidence of defective workmanship or materials, is constructive fraud."

If this were an isolated case, one might say simply that the judge's harsh words were amply justified and let the matter drop there. But a review of the many similar cases that have been recorded over the past few decades, unfortunately, will show a good many instances of an engineer attempting to use the powers granted him under a contract to prevent his errors from costing his client more than his original estimates.

In engineering circles much is said about the peculiar position that engineers occupy in relation to their employers or clients, especially on contract construction work. There can be no doubt that the engineer's position is one of special importance, but in the light of this record, is it not possible that too much emphasis has been laid on the respect that is due engineers because of the peculiar position they occupy, and not enough emphasis has been laid on the responsibilities that go with that position?

Under most construction contracts the engineer's findings are final. The contractor has no appeal except to the courts. Often the engineer must interpret contract provisions that he himself has written or construe plans that he has drawn. He is both judge and jury, and yet he has had little or no training in the fundamentals of equity.

Fortunately, in the thousands of such decisions that engineers make year in and year out, their record of fairness and equitable treatment has been high. But the world judges a profession not by these unrecorded decisions but by the ones that get into the courts and thus into the daily papers.

All of which points to the need for engineers to educate their young men to accept the responsibilities of their jobs regardless of cost to them or their client, and for the profession to be strict in disciplining its members who fail to live up to those responsibilities.

This would appear to be a fruitful field of activity for the state societies of professional engineers. So far as we know, no one of them has resorted to disciplinary action in cases of this kind as a means for emphasizing the absolute need for impartiality by engineers in interpreting contracts.

Controls are here

STARTING AT MIDNIGHT MAY 3 no construction requiring more than 25 tons of steel can be started without a permit from the National Production Authority. It is not a welcome prospect, but it was a foregone conclusion, as editorials in this space have repeatedly warned. The time may come when we can have both guns and butter, but until we have the guns it is the better part of wisdom to postpone some of the butter items. They weren't being postponed under the free-choice system that existed. The control crackdown was the result.

Actually the new order merely extends to all construction similar if slightly rougher treatment (exempting only 25 ton instead of 50 ton jobs) than has been accorded to commercial buildings and other business facilities since Jan. 13. A permit, issued on an acceptable showing of essentiality to the defense effort, is necessary for a job to go ahead.

It is in contemplating this permit system that one of the doubts about the advisability of the controls arises: Can the NPA process applications fast enough to avoid a slowdown in essential construction? Such a slowdown might do more damage than the loss of a little extra steel on non-essential work until the Controlled Materials Plan gets into operation. That is the position that the Construction Industry Advisory Committee took in its discussions with the NPA, and it has considerable force.

NPA, however, believes that the permit arrangement is a necessary partner to CMP in any case, and an absolute must to save steel before CMP is fully effective. Consequently, NPA may be expected to process permits at all possible speed. Yet its best is not apt to be good enough if large numbers of questionable projects are submitted. Those who have such projects would aid the defense effort by postponing them.

This much having been said in favor of living with the controls now that they are here, it should also be said that NPA has a responsibility to diminish or remove them at the earliest opportunity. Many segments of the construction industry are going to be sorely damaged. Moreover, that damage could extend to the whole economy, and weakness there would constitute weakness in the defense that we are seeking to strengthen. The construction industry should lose no opportunity to push its claims for fair treatment and its ideas for sensible administering of the controls.

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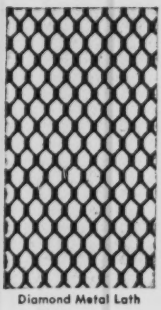
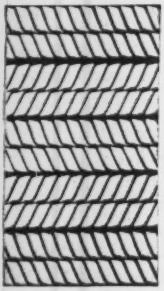
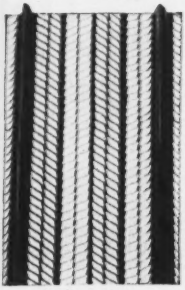


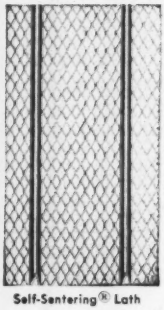
Diamond Metal Lath



Herringbone Doublemesh Metal Lath



Ribplex Lath



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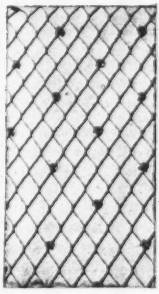

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ENGINEERING NEWS-RECORD

MAY 17, 1951 VOL. 146 NO. 20

NPA clarifies application of broadened control order

Exempts "quick amortization" jobs, and industrial expansion work using less than 25 tons of steel—Will handle all new applications in Washington

NPA was shaping plans last week for rigorous screening of new project applications. For the time being, the construction controls division will handle in Washington all applications that come in as a result of the recent broadening of the M-4 Order.

Under the latest widening of construction controls, all jobs using more than 25 tons of steel must get NPA approval before work begins (ENR, May 10, p. 23). To simplify that order, the agency made two amendments last week.

One change exempts projects which have received certificates of necessity for five-year tax amortization from the Defense Production Administration. These jobs have already been approved as defense-supporting projects before getting the certificates; there is no need to screen them a second time. They can proceed without applying for an NPA license. This clarification of the order will help reduce the workload of the construction controls division.

Another amendment gives specific exemption to industrial improvement and expansion jobs that use no more than 25 tons of steel. The change clears away any doubts about plant modernization projects that don't require a larger quantity of construction steel. They can go ahead without NPA authorization.

NPA field offices in 30 regions and districts will continue to pass on commercial building applications for jobs costing less than $1,000,000 and using not more than 50 tons of steel. All other projects—both private and public will be processed in the Washington office.

Concentrating the applications in the main office will make for closer control of licensing. Washington has done a tighter screening job on commercial building applications than have the field offices.

But the present plan to centralize decisions at headquarters is said to be temporary. When the field offices have built up their staffs and become familiar with the new criteria, they are expected to handle industrial and public works applications for their areas.

● **Toughened up**—The Washington office is expanding its staff to take care of the greater load. At the same time criteria are being drafted as a basis for decisions. The new rules will be tough.

On public projects, NPA expects to make its decisions in full cooperation and coordination with claimant agencies to be named—such as the Bureau of Public Roads for highways and the Federal Security Agency for hospitals and schools.

After the Controlled Materials Plan starts operating, steel allocations will determine what public projects go ahead.

So far, NPA has no guide on steel allotment for construction. The construction controls division has only one rule to follow: save every pound possible.

● **Speed depends on info**—NPA has been acting on commercial applications in a reasonably short time. The agency emphasizes that the speed of action depends on full documentation by the applicant.

Recent NPA announcements make it clear that new construction starts will be severely curtailed. For July, the steel set-asides for defense and defense-supporting programs may exceed 50% of the total output of steel ingots during that month. The percentage will probably be higher for some products, such as plates and tubes.

NPA planned to issue orders last weekend to the steel companies for carbon steel to be delivered to the defense and defense-supporting programs out of July production. Those directives will give the first CMP indication of what construction may expect under the plan.

AGC sees delays in job processing

The Associated General Contractors of America—through H. E. Foreman, managing director, and association officers took a stand last week on the amended M-4 Order of the National Production Authority (ENR May 10, p. 23).

AGC fears that serious delays may develop in the processing of construction permits even for urgent projects. The association does not see how Department of Commerce field offices can build up competent staffs quickly enough to handle the huge volume of detailed work suddenly thrust upon them.

The association released a statement as follows:

"The amendments issued today to National Production Authority Order M-4 placing further restrictions on construction will have an unnecessarily harmful effect upon the construction industry, and the defense program and essential civilian activities requiring construction, unless the order is implemented immediately with administrative machinery to process applications for authorization of projects without delay.

"It does not appear that NPA now has adequate administrative machinery to process the applications promptly. Since February there have been delays in the processing of applications for commercial projects. With practically every new public or private construction project requiring NPA authorization now, serious delays may be encountered in securing approval even for urgent projects.

"With shortages of architects and engineers, it is difficult to understand how 30 field offices of the Department of Commerce can build up their staffs quickly to give the detailed study to design and specifications required by the amended order to each of the varied kinds of construction projects from industrial plants, water systems and highways necessary in the nation's more than 3,000 counties.

"Long delays can be harmful to the defense effort and to essential civilian activities requiring construction.

"Rigid adherence to terms of the revised order can lead to local unemployment in areas where little defense construction is expected."

AGC representatives are going into conference with NPA officials in an attempt to alleviate harmful effects.

New Jersey has big development plans

New Jersey's State Planning and Development Council recently completed 15 years of work with the submission to Governor Alfred E. Driscoll of a program for the state's future development.

The plan calls for extensive and continuous engineering and construction activities in all the fields of public works for many years in the future. Included are highways, water supply, airports, recreational and institutional facilities and state parks.

● **Highways**—Proposed major highway improvements are: Extension of the New Jersey Turnpike now under construction north to the state line in Bergen County; a new super highway between New Brunswick and Dover; extension of Route 4 Parkway, also under construction, northward to the state line; a parkway from Route 4 in Union County across the state to Trenton; parkways linking Monmouth County seashore resorts with Route 4 near South Amboy.

It is recommended further that special attention be paid to the obtaining of right-of-way widths sufficient for possible future widening, for control of access and to avoid excessive costs.

The development of more by-pass and circumferential routes, especially as related to metropolitan areas, is advised to encourage as much decentralization of traffic as is practical.

● **Water and fun**—Water resources development would include water supply projects for three main regions of the state:

1. Northern Metropolitan District, comprising most of the northeastern section of the state.

2. Southern Metropolitan District, comprised of Trenton, Camden and adjacent areas.

3. Seashore Resort District, extending from Sandy Hook to Cape May.

These proposals would mean the development of at least seven more watershed and reservoir sites and the further expansion of municipal sewage treatment plants.

Much attention is given in the printed report to the importance of developing and expanding the state's recreational areas. Proposals take in large stretches of seashore, almost the entire length of the Delaware River boundary on the west and complete development of the Delaware & Raritan Canal for recreational purposes.

● **Airports**—Aviation comes in for a share of attention. Suggested is the improvement of 11 existing airports construction of 20 new airports and 16 landing strips. Heliports to serve extensive metropolitan areas are stressed.

State institutions are brought into the picture by recommendations for at least one additional mental hospital immediately; construction of additional facilities for existing mental and general hospitals; more bed space for the feebleminded; and the construction of additional prison facilities—which would serve as the nucleus of an eventually all-new prison in Trenton.

Copies of the council's report can be obtained from the New Jersey Department of Conservation and Economic Development, Trenton, N. J. There is a moderate charge to cover handling costs.

Geo. A. Hool dies at 67; engineer, educator, author

George A. Hool, 67, structural engineer, educator and author of a number of books on structural engineering, died at San Rafael, Calif., April 27. He was a graduate of the Massachusetts Institute of Technology, 1905. After graduation there, he spent some time in the employ of the New York Central Railroad and the N. Y. State Highway Department.

Then he started the civil engineering department at the University of Oklahoma, where he remained two years. This was followed by 20 years as head of civil engineering at the University of Wisconsin. He left there in 1930 to become vice-president of the Ferguson Company. Later he acted as special consulting engineer for the Army and Navy until 1947, when he was appointed chief engineer for the work in Greece by the pool of three contracting firms in American aid to Greece projects.

During his university career Mr. Hool was a consulting engineer in structural engineering and prepared many books on that subject—14 in all—published by the McGraw-Hill Book Co., including "Stresses in Framed Structures," "Structural Members and Connections," "Foundations, Abutments and Footings," "Concrete Engineers' Handbook," "Reinforced Concrete and Masonry Structures," "Steel and Timber Structures," and "Concrete Designers' Manual."

HONORED—Karl R. Kennison, consulting civil and hydraulic engineer, Waban, Mass., and formerly chief engineer of Boston's Metropolitan District Water Supply Commission, with the certificate awarded him by the Engineering Societies of New England, Inc., May 3. The award, made annually by the societies, summarizes Kennison's civil engineering career, lists his contributions to hydraulic research, leadership in water supply development and in construction. (L. V. Kramer photo)

Authority marks 30 years; vehicles bring most income

Last week the Port of New York Authority—on the 30th anniversary of the treaty-signing between New York and New Jersey, which established the authority—issued its annual report for 1950.

Gross revenue for the year was more than $42 million. Of this total, $32.7 million was derived from bridge and tunnel tolls on motor vehicles. The total number of vehicles handled was 59.5 million.

Featured activities during the year include the beginning of commutation rates for passenger cars for the George Washington Bridge and the Holland and Lincoln Tunnels and the opening of the new bus terminal in Manhattan (ENR Dec. 14, 1950, p. 32).

Operation of the largest four of the metropolitan airports brought a net profit of $246,000—as compared to deficits in former years. The profit was due largely to greater air activity in all its commercial and private phases.

During the year, the authority also began the study of using shore-based radar as a safety aid to marine traffic over the entire harbor area and the sea approaches. A nine-month trial demonstration is under way.

The Port of New York Authority claims to be the oldest of some 150 "authorities" in the country and at the end of its first 30 years has a capital investment of $371 million. Bonds outstanding amount to $248 million.

Engineers issue bulletin on deferment procedures

The Engineering Manpower Commission of Engineers Joint Council released its first report, "Utilizing Engineering Manpower," last week. The bulletin (No. 1) dwells in detail on procedures to be followed when requesting occupational deferments and delays for needed personnel.

Emphasizing that "since we cannot match our enemies in numbers, it is necessary that we excel them in the effective use of our available manpower," the bulletin counsels on students, current graduates, reservists and non-reservists.

It lists Army, Navy and Air Force publications and directives available for clarification of points in question. Copies may be had from the Engineering Manpower Commission, 29 West 39th St., New York 18, New York, for a nominal charge to cover handling.

Northern, Stewart to build British Columbia hydro dam

Contract to build a dam 1,300 ft long, an important part of British Columbia Electric's $10 million Wahleach (Jones) Lake hydro project in the upper Fraser Valley, has been awarded to Northern Construction Co. and J. W. Stewart, Ltd., for just over $900,000, the lowest of five bids.

The main dam will be located at the north end of the lake, near the outlet into Wahleach Creek. It will measure 1,300 ft along the crest, 60 ft in height, and 380 ft in width at the base, sloping upward to 20 ft at the top. Made of 250,000 cu yd of rock and fill quarried from a nearby site, the dam will contain a clay core.

The dam will raise the lake level 40 ft and nearly double its present size, making 52,000 acre-ft of water available for hydro-electric use.

From the lake, the water will flow down a 13,000-ft tunnel-penstock to the powerhouse 2,000 ft below on the Fraser River. This drop is the largest of any hydro project in Canada and among the highest in the world.

Truman names Robinson D.C. engr-commissioner

Col. Bernard L. Robinson, Corps of Engineers, district engineer at Atlanta for the past two years, was named by President Truman last week to be the new engineer-commissioner for the District of Columbia. He succeeds Brig. Gen. Gordon R. Young (ENR May 10, p. 24) at the end of this month.

Structural design firms pressed hard as new work spurts for defense

Survey of 11 large design and construction companies shows work increases averaging 130%—personnel shortage the big problem

Structural designing firms, under pressure to keep in step with the demand for industrial expansion, are facing personnel, materials and scheduling adjustments reminiscent of World War II.

The spurt of new work on their books since May of 1950 has meant increases in staff; longer working hours; employment of new engineering graduates at bigger salaries; shifts to substitutes that will reduce dependence on the tight structural steel supply.

In a survey of conditions in eleven companies that design industrial facilities throughout the U.S., reports of design-output commitments show the big jump those commitments have taken in recent months.

The problems of readjustment to new work loads are solved in part by overtime work and new hirings, but they also are solved by shifting personnel from less-rushed departments to high-pressured assignments.

Increases over 1950 in value of construction for which plans are being made range from 15% ($40 million now, $35 million in '50) to 450% ($33 million now, $6 million in 1950), with an average of 130%. (The average is indicative only because of the sample's small size.)

Arthur G. McKee & Co., Cleveland, recently reported the highest dollar volume in its history—$200 million—an increase of $50 million over the close of 1950.

● **It hurts here**—The tightest pinch being felt with the addition of new work load is in personnel available for design and drafting. Of eight companies that stated type of men needed, 7 reported a dearth of designers and draftsmen.

One design firm needs 200 more in these categories, even though it already has increased its staff from 499 to 800 since May of 1950. Another firm reports an increase from 617 to 717 with 100 more needed to carry on at the demand rates. An increase of design men from 40 to 140 since the great industrial tide-rise, with a shortage of 10 designers, is the status of another firm.

All companies are under pressure to meet schedules. In face of the tight technical manpower situation, commitments are being met by a longer work week. All companies surveyed are working overtime and Saturdays.

With the continuing shortage of design engineers (a recent ECPD survey noted that the shortage in all types of engineers is expected to amount to 18,000 in 1956), the demand for designers is leading to more attractive salaries. Fledglings graduating from engineering colleges before June, 1950, vied with each other for limited job openings.

● **You name it**—Today the new graduate can choose his company as well as his salary—$315 a month for a B.S. is easy to find today in comparison to amounts as low as $240 a month a year ago. An M.S. can start at $375 a month where a year ago he might have gotten $250 in a sound, well established firm. (One firm noted that current higher pay is due in part to overtime, but in most cases, base pay is up significantly.)

Competition for labor within the industry is driving salaries up. Design engineers from older firms, whose wage base is governed by pre-inflation standards, are said to be lured away by newly-established firms with no basing point for salaries.

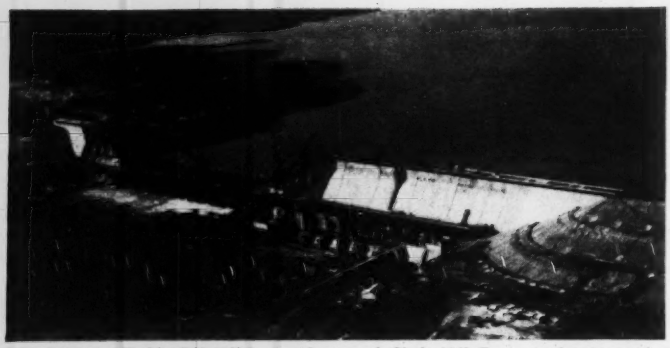
This is an important problem for the established firms, which feel that the new organizations offer smaller security for the engineer in the long run.

A symptom of the situation is to be seen in the want-ad columns of daily newspapers and engineering magazines. Established firms stress "permanent employment," the best of working conditions, "long-term employment," "usual pension and other benefits." Structural, mechanical and electrical engineers are finding B.S. degrees an open sesame to job possibilities that the Bureau of Labor Statistics would have pooh-poohed in its Spring 1950 study of the future need for engineers.

● **Materials**—Another factor in the situation is the painful awareness of restricted structural steel for fabricating, and the competition for that steel. Some leading companies are skirting the steel bottleneck by going to other materials.

The John J. Harte Co. of Atlanta, Ga. uses treated timber on mill type construction when steel supply is delayed. Logically, where feasible, reinforced concrete is being substituted for steel by some. More attention is being paid to precasting techniques, too.

Wood trusses, reinforced concrete crane columns, and dry wall to eliminate brick is a switchover mentioned by one design firm.



PROGRESS AT CLARK HILL—Aerial view of Clark Hill Dam on the Savannah River, near Augusta, Ga. (ENR Dec. 29, 1949, p. 13), shows closure of the dam and start of construction on the power plant. There will be seven 40,000-kw generating units. The Corps of Engineers is constructing the project for flood control and power. Electricity will be supplied from here to the Atomic Energy Commission's new plant now under way downstream in South Carolina (ENR Dec. 7, 1950, p. 25).

PHS sets waste works need: $9 billion

The U. S. Public Health Service says that pollution is so seriously cutting down the supply of usable water for industrial and domestic requirements that widespread construction of treatment works will be necessary during the next ten years to save water for the future. It will cost from nine to 12 billion dollars.

A report on this problem, "Water Pollution in the United States," was released last week, concurrently with the annual conference of state sanitary engineers in Washington, D. C., to discuss the progress of sanitation programs throughout the U. S. with the Public Health Service. Attending the conference, May 7 to 11, were the chief engineers of all state health departments, most of whom have an active part in the cooperative water pollution control studies carried on by the states and the Public Health Service under the Water Pollution Control Act of 1948.

The newly-published report sets forth the first national summaries of data from initial state and federal studies for the development of comprehensive pollution abatement programs for the nation's waterways.

● **Blame divided** – It shows a total of more than 22,000 sources of pollution in the U. S. divided between 11,800 municipal sewer systems, and 10,400 industrial waste outlets.

Despite the reduction of pollution by 9,300 treatment plants now operating, including 6,700 municipal and 2,600 industrial plants, untreated wastes still discharged into rivers and lakes equal 150 million population equivalents.

To handle these polluting wastes, 6,600 more municipal sewage treatment plants or additions to present plants, and 3,500 more industrial waste treatment plants or additions are required.

It is estimated that the construction of 6,600 municipal plants to take care of present needs will cost around $2.5 billion, and that an additional $2 billion will be required to keep these facilities up to date, to expand them and build new ones over the next ten years. Plant investment for industry will be even higher, it is believed.

On the industrial side, it is shown that of the 10,401 plants independently discharging wastes into waterways, 2,595 treat their wastes while 3,659 do not. Treatment facilities are unreported for 4,147 establishments.

● **Construction rate**—Although slowed down during World War II due to the scarcity of materials, building of treatment plants, under the stimulus of state and interstate water pollution control agencies, has picked up well since the war, it was found. A total of 1,163 plants was built from 1946 and 1949 inclusive.

There were 44 industrial treatment plants built in 1946, 97 in 1947, 175 in 1948, and 201 in 1949.

As of July 1, 1950, 326 municipal treatment plants were under construction, final plans have been approved for 854, and 961 others are in the planning stage.

Industry has 114 treatment plants under construction, has approved final plans for 124 and is planning 410 more.

Cost of reclaimed water found excessive in Calif.

A report to the California legislature states it would be inadvisable to use reclaimed sewage water from San Francisco as a source of irrigation water for the Santa Clara Valley.

The report was prepared by State Engineer A. D. Edmonston, State Director of Public Works, C. H. Purcell, and Assemblyman Randal F. Dickey, chairman of the state assembly interim fact-finding committee on air and water pollution.

It is pointed out that estimated costs of reclaimed sewage from the Richmond-Sunset plant, delivered to the Santa Clara County line (about 30 mi) and to Evergreen in northern Santa Clara Valley (about 50 mi) are about $31 and $47 per acre-ft.

The latter figure is more than double the estimate for importing water of better mineral quality and sufficient amount from the Sacramento-San Joaquin Delta, and is substantially higher than the probable costs of water from further possible development of local sources in Santa Clara County.

It was suggested that no further consideration be given to the use of San Francisco sewage water and that county agencies responsible for furnishing the needed water supplies, proceed with their planned local projects as far as practicable.

BRAB Research Institute spurs information exchange

The Building Research Advisory Board has created a complementary and supporting organization called the Building Research Institute. The institute will operate as a liaison agency —answering a need for closer relationships between BRAB and those interested in building research.

In addition, the new affiliate will strengthen BRAB financially and provide a common meeting ground for research men from all parts of the building industry. Through its activities it will be possible for the industry members to get together to discuss mutual research problems and express their opinions.

Industry forums are planned and a fast-working publications service, bringing members the latest research information, is being initiated.

Membership in the institute is under five classifications: Manufacturers; contractors; associations; participating memberships; and professional memberships. The institute can be contacted at 2101 Constitution Ave., Washington 25, D. C.

States seek methods to raise funds for highway construction and repair

More gasoline tax increases indicated as road construction falls behind needs and severe winter damage boosts maintenance costs

State highway departments and other groups interested in the pressing need for the vast expansion, improvement and repair needs of the country's roads are continuing to fight to get enough money to meet the situation.

House members in Michigan have approved a $39.4-million tax increase for the state's 2.5 million motorists. The House voted to boost gasoline taxes from 3 to 5 cents a gallon and diesel fuel from 5 to 7 cents. Truckers also would be called upon to pay $5.4 million more in weight taxes.

The revenues proposed would swell Michigan's total highway monies to $135 million a year. Some differences between the State Senate version and that which the House voted have to be reconciled before the bill can be sent to Governor G. Mennen Williams, who had warned earlier that he would veto a gasoline tax increase.

● **Heavy vehicles blamed**—Michigan's Good Roads Federation states that heavy trucks and buses are responsible for the major damage to miles of trunk highways—yet pay less than their equitable share of maintenance costs. It is claimed that trucks and buses pay 29% of the weight and gasoline tax. This includes light trucks.

A definite highway improvement construction project is in the works for the state. A new $10-million highway, linking Detroit and Toledo, Ohio, will be begun by the highway department this year. Another $10-million program for the improvement of Wayne County roads was launched in April.

● **Florida in arrears**—W. M. Parker, an engineer in the traffic and planning section of the State Road Department of Florida, declares that his state is $400 million in arrears in its efforts to keep the primary highway system in "adequate condition." He adds that the state is losing ground in this direction because it costs twice as much to build a highway in Florida now as it did 10 years ago.

The state's road department schedules its operations according to a continuing 15-year priority program. Each year traffic engineers ride out each section of highway and place it on one of three construction priorities: To be repaired or replaced within three years; to be repaired in three to nine years; or to be repaired in nine to 15 years.

● **Ohio loses**—Due to abnormal winter damage to its roads, Ohio's highway department will have to reduce 1951 new construction by about $30 million as compared with 1950 expenditures. Although not all of this money will be needed for repairs, the state will have to take about $8 million out of construction funds for repair work.

● **For atomic energy**—Construction crews are racing against time to complete a major 22-mile highway linking the Atomic Energy Commission's Savannah River site in South Carolina (ENR Dec. 7, 1950, p. 25) with U. S. 1 between Aiken and Augusta, Ga.

The access road will be divided-lane, with two parallel lanes of 24 ft each, separated by a 24-ft median strip. Grading of the route and necessary bridge construction are being rushed to meet a June 30 deadline. R. B. Potashnick, Cape Girardeau, Mo., has the clearing and grading contract, under a bid of $2,038,274.

● **Washington tax test**—Whether the State of Washington can pledge its motor fuels tax to the retirement of bonds issued to finance highways will be determined in the state supreme court at Olympia May 17.

Under the state constitution, the tax must be used only for building and maintaining highways. The recent state legislature authorized a $67 million bond issue for the improvement of highways, the bonds to be retired by the tax. The court now will determine whether the constitution authorizes the tax collections to be used to retire debt incurred for building highways.

● **California beauty**—The California State Highway Commission has gone on record favoring a ban on all advertising billboards adjacent to landscaped metropolitan freeways, either on state or privately-owned land. Proposals:

1—All leases for billboards on state-owned property adjacent to constructed metropolitan freeways where landscaping is planned should be cancelled.

2—Landscaping on metropolitan freeways other than erosion control and bank protection will not be undertaken, unless the city or county involved prohibits the location of billboards on adjacent property.

Highways get $66 million under Wash. court decision

A recent unanimous decision of the Washington State Supreme Court certified the legality of a $66,700,000 bond issue for state highways.

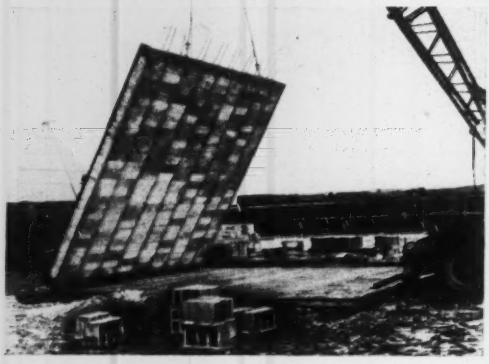
Financing was authorized earlier by the state legislature and Governor Arthur B. Langlie, who signed the bill (ENR April 5, p. 25).

Work to be performed includes four major projects: (1) Modernizing the Pacific Highway in Western Washington; (2) a truck lane for Snoqualme Pass on the principal east-west highway through the Cascades; (3) a bridge over the Columbia River; and (4) new roads in the Columbia Basin irrigation project.

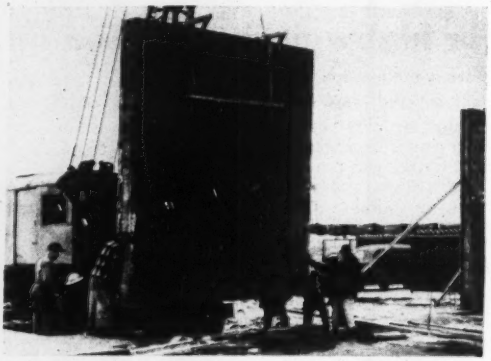
The bonds issued are to be retired through gasoline tax collections.

TOO MUCH WATER FOR HIGHWAY—This section of San Francisco's new Bayshore Freeway failed before being opened to traffic. Some 7,000 cu yd of fill and original ground were involved in a slide attributed to extra-heavy rains. Hillside drains did not carry away all the water. To repair the break, a sand blanket will be placed on undisturbed soil and topped by compacted fill. Additional drains will be placed. Contractors are being reimbursed for the repair on a unit price basis. Contract is a joint venture of Guy F. Atkinson Co. and Chas. L. Harney, Inc. (S. F. Chronicle photo)

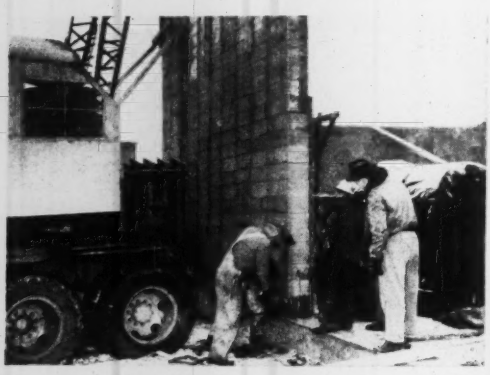
Wall sections tilt-up and turn; cast-in-place columns tie sections together



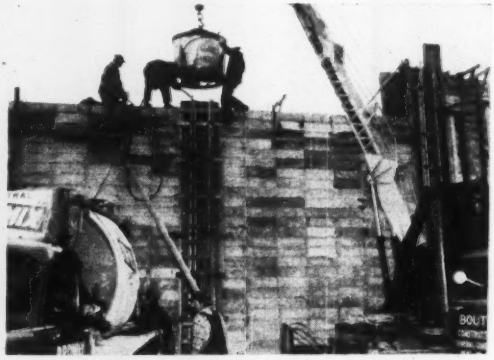
TILT-UP WALL for warehouse in Spokane consists of pumice blocks (foreground) with reinforced concrete backing. Blocks, laid flange-down on casting platform, establish beam channels, from which main reinforcing rods project. Wall also has top and horizontal bottom tie beams, with lifting hooks in top beam.



LIGHTWEIGHT CONCRETE—Weighing 102 lb per cu ft, the concrete is 2½ in. thick at blocks. It has 6x6-in. No. 6 mesh temperature reinforcing and is steel-troweled. Section 16-ft square has been turned around to face concrete side toward casting platform. (Platform is building's floor.)

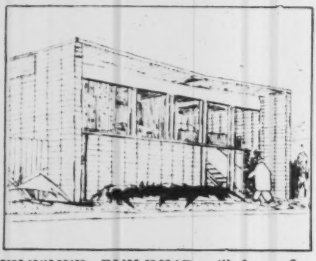


BLOCK SIDE of wall faces outdoors, giving warehouse a grid-like appearance. Concrete side faces inward to furnish resistance to water-hose streams during the cleaning of salvaged objects (owner is Underwriters Salvage Co., of New York). Crane eases wall section to place on grade beam.



PILASTERS are cast in place, in gaps left between tilt-up wall panels. This concrete also is lightweight. Coarse aggregate is an expanded shale, which provides good insulating properties. With five sacks of cement per cubic yard, 28-day strength was 4,400 psi. Pours 15 ft deep showed no honeycomb upon form removal.

Tilt-up block walls insulate warehouse



FINISHED BUILDING will have flattened V roof, laminated timber girders.

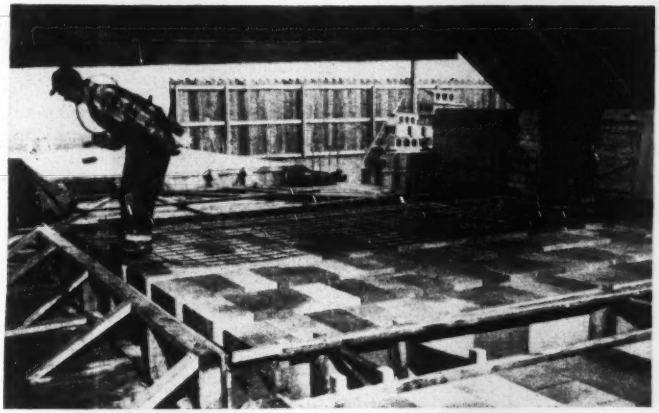
INSULATING VALUE, plus impermeability on the inner surface, were warehouse wall properties sought by a salvage company when it decided to build in Spokane, Wash.

Salvaged items were to be cleaned by jets of water, which also would hit the walls. This is where impermeability came in. And then the items would be dried out. This called for warm, dry space. Heating efficiency demanded walls with low heat transmission characteristics.

Designers came up with a combination hollow-block and lightweight concrete wall section that not only complied with the initial requirement, but also could be built at relatively low cost.

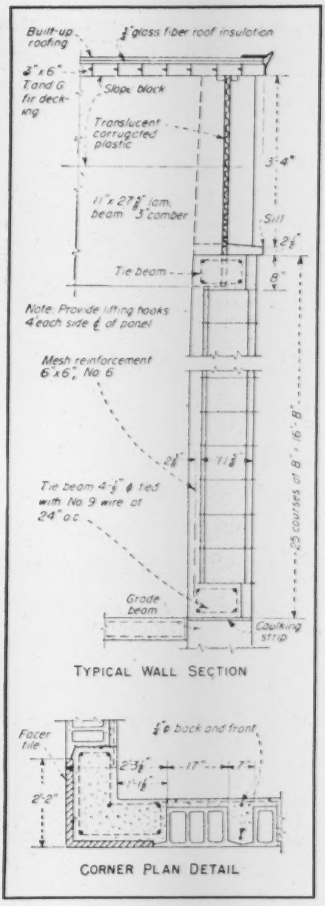
The fact that the section could be adapted for the economies of tilt-up construction contributed to the low cost.

Choice of the section was based on an analysis summarized in the accompanying table. While straight pumice block construction would provide cheap insulation, it would crack and deteriorate under repeated wettings. The more expensive plastered section



BLOCK ASSEMBLY for tilt-up wall construction took place inside winter shelter. Channel to left is form for tie beam, containing four ½-in. rods. Note diaphragms over ends of block strings, to keep concrete out of block cells. Channels between blocks contain ½ in. bars, one at bottom and one at top. With this reinforcement, wall panel deflects $\frac{3}{16}$-in. during tilt-up.

CONCRETE BACKING goes in over blocks. Mix, with 3-in. slump, had good workability for this use, thanks to the admixture of a dispersal agent. Mesh reinforcement controls cracking in finished wall. Lightweight concrete and cellular blacks give wall low heat transmissibility factor that is important in this structure. Occupant needs warm space for drying out wet salvaged goods.



TYPICAL WALL SECTION

CORNER PLAN DETAIL

WALL SECTION, top, shows tie-beam reinforcement; also window and roof construction. At bottom is shown how cast-in-place concrete joins panels; also rods that give T-beam effect to vertical channels.

would have had similar disadvantages.

Six-inch concrete would be durable but it would be a poor insulator. (Cost comparison here, between tilt-up and cast-in-place, reveals an outstanding cost differential in favor of tilt-up.)

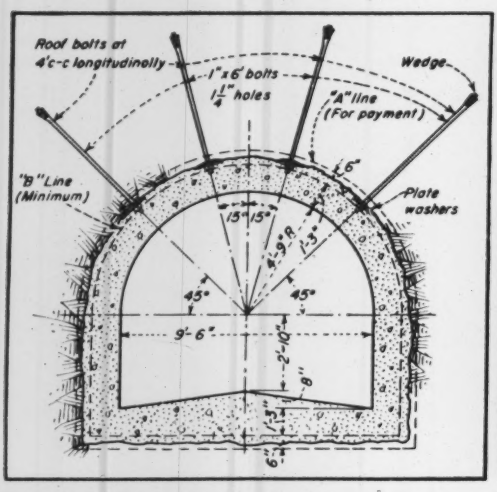
Special pumice blocks in the adopted section are a "soffit" type, normally used for fireproof floor construction. Lightweight concrete has inherent insulating value, its coarse aggregate being a shale that is "popped" by heat, to entrap a multitude of air cells.

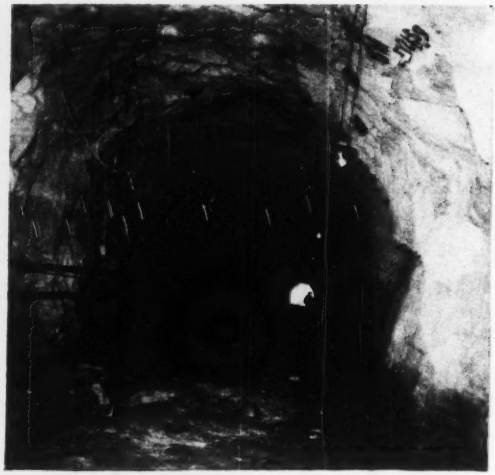
Because blocks would set up a number of weakness planes in the composite wall unit, designers specified mesh reinforcement for crack control.

Building's owner is Underwriters Salvage Co. of New York. Consulting engineers were Norrie and Campbell. Architect: Kenneth L. Brooks. Contractor: Roy L. Blair. All are of Spokane.

COST ANALYSIS FOR WALL TYPES

Wall Type	Heat Transmission Factor	Cost per sq ft
8-in. pumice block	0.218	$1.00
6-in. concrete, tilt-up construction	0.79	1.04
6-in. concrete, poured in wall forms	0.79	2.08
12-in. pumice block	0.18	1.22
12-in. pumice block plus 2x4-in. furring, metal lath and plaster	0.151	1.62
12-in. pumice soffit block with insulating concrete facing and core (ADOPTED)	0.164	1.48





Roof-bolting, normally used to prevent overbreak in coal mining, permitted . . .

Diversion tunnel driving without liners —Keyhole Dam, Wyo.

ROCK TUNNEL DRIVING usually calls for an expensive system of steel ribs and lagging or timber bracing to protect workmen from falling rock. But very little such protection was needed in driving an 11x12-ft by 654-ft diversion tunnel at Keyhole Dam, even though the surrounding sandstone contained open seams and was subject to slacking when exposed to air.

After blasting, the contractor resorted to roof-bolting—commonly used to prevent overbreak in coal mining—to hold cracked formations that otherwise might slip or fall out.

The roof bolts were 1-in. dia. They were power-driven into 1¼-in. holes drilled radially to the axis of the tunnel, to a depth of 4 in. less than bolt-length. All roof bolts were 6 ft long except 27 bolts 8 ft 4 in. long used horizontally at the portals. Roof-bolt locations were mostly a matter of judgment exercised by the tunnel foreman.

As shown in the accompanying drawing, a steel wedge was inserted in the slotted end of each bolt inserted in a hole. When this wedge hit the end of the drilled hole it spread the slot, providing anchorage. Plate washers, 8x8x¼-in., placed under a nut on the exposed end of the rods held the faulted rock safely in place. The nuts were tightened with an air wrench and a hand ratchet wrench.

• **Flood-control and irrigation**—Keyhole dam and reservoir, a $4,300,000 Bureau of Reclamation project located on the Belle Fourche River near Moorcroft, Wyo., will serve primarily to control floods, retain silt and provide supplemental irrigation water for 56,000 acres of the Belle Fourche irrigation project and other areas in western South Dakota. It also will furnish a potential supply of municipal water for Belle Fourche, S. D.

The dam will be a rolled-fill embankment 164 ft high, with a top length of 3,420 ft. It will have an open-channel and an uncontrolled spillway in the right abutment, with the tunnel outlet works in the left abutment.

The reservoir formed by the dam (due to be completed in October 1952, or sooner) will control the runoff from a drainage area of 1,950 sq mi. Its maximum storage capacity will be 628,000 acre-ft; of which 200,000 acre-ft will be for irrigation and silt retention, and 428,000 acre-ft for flood protection.

The 654-ft diversion tunnel is part of a $1,668,000 contract awarded last summer for construction of the dam. The tunnel will serve as a control outlet in the completed structure. Preliminary contracts in the project, now completed, include construction of an access highway and camp facilities, such as a government office building, laboratory and 28 residences for supervisory and other personnel.

The tunnel was collared on July 24 and holed through Sept. 6—a total of 38 one-shift working days, of which 35 were spent in driving the tunnel. This rapid progress was due, in part, to the elimination of the usual time-consuming job of setting tunnel bracing.

Another saving in time and expense was made at the downstream portal. A ring of roof bolts, inserted horizontally around the periphery of the tunnel bore, together with a small amount of timbering, held the exposed rock face in place. Otherwise it would have been necessary to move this portal back an estimated 10 ft.; necessitating, in turn, considerably more open-cut excavation before tunnelling operations could be started.

• **Time study records**—Accurate progress records kept after the heading had been advanced 33 ft, disclosed that a total of 77 rounds of blasting were needed to remove 3,230 cu yd of rock in the remaining 621 ft of tunnel.

Holes were drilled 9 ft deep, for an average pull of 8 ft, by a three-drill jumbo mounted on an Army half-track. About 33 holes were drilled per round, with about 2¾ rounds drilled, blasted and mucked per 8-hr shift. All blasting was done with a 45% strength

powder, controlled by electric caps varying from no delay to one-fifth second.

Each round of blasting produced 42 cu yd of rock, which was loaded into small dump trucks by a tractor-mounted rocker shovel, and hauled to a spoil area. Average production was 1.0 cu yd of rock per 2.66 lb of powder.

It took an average of 4.4 ft of roof-bolts per linear foot tunnel to hold the surrounding sandstone in place with complete safety.

• **Typical 9-ft round**—The job went along smoothly, with the various mining operations for each 9-ft round of blasting requiring the following time: Setting up and drilling for blasting, 1 hr 15 min; placing roof-bolts, 35 min; loading, 35 min; firing and ventilating, 15 min; and mucking, 1 hr 10 min.

Ample ventilation with a 5,000-cfm forced-air fan and an 18-in. air line permitted operation of diesel equipment in the tunnel. The fan was used to force fresh air up to the heading and thereby push powder fumes out the tunnel following blasting operations.

Considerable roof-bolting was needed in the first 100 ft of tunnel from the downstream portal, from which the tunnel was driven. This length of tunnel was supported by a layer of clay stone varying in thickness from 18 ft at the portal to zero at a distance of 62 ft in the tunnel.

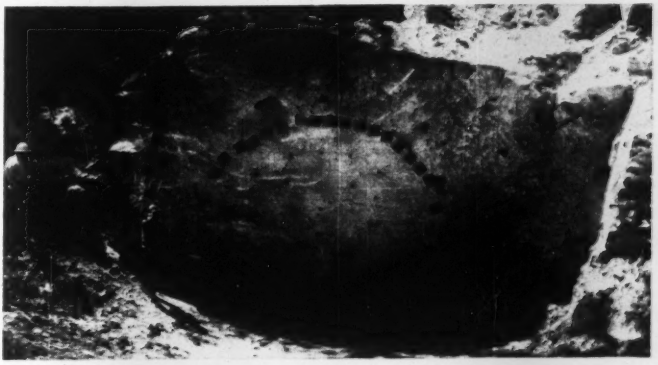
It was this yielding support that had permitted settlement of the superimposed sandstone, resulting in open seams. Beyond the initial 100 ft of tunnel, the roof-bolts were used mainly to prevent possible damage from the sandstone slacking when exposed to air.

Gates & Fox Co., Salt Lake City, were subcontractors on mining the diversion tunnel. Kirk H. Fox was construction superintendent in charge of tunneling.

General contractors on Keyhole Dam are Knisely-Moore Construction Co., Douglas, Wyo. Don M. Adams is project manager. Knisely-Moore have completed the concrete lining, which was pumped into place through 700-ft of 6½-in. line. Concrete in the wall and arch sections was placed by two machines; one pumped it into the tunnel, while the other pumped it into the forms.

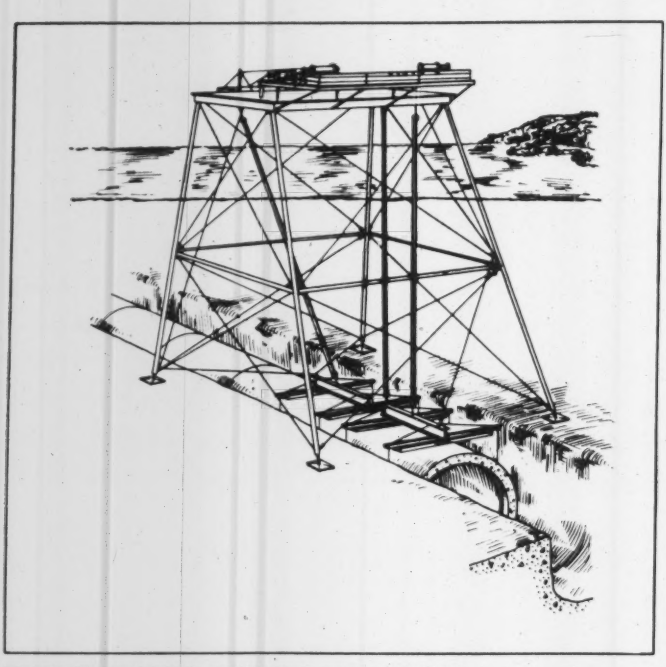
Bureau of Reclamation engineers connected with the project include: Frank E. Goehring, construction engineer; Marion J. Clark, office engineer; Paavo D. Carlson field engineer; Eugene B. Anderson, chief inspector; and Darrel W. Hansen, chief of surveys.

THREE-ARM JUMBO RIG mounted on an Army half-track drilled horizontal roof-bolt holes at portals; also the blasting holes inside tunnel. (USBR photo)



BOLTING THE FACE OF PORTAL prior to initial round of blasting avoided moving the portal back at least 10 ft; thus saving open-cut excavation. (USBR photo)

ROCKER-SHOVEL on crawler tractor had ample room for loading muck into dump trucks, thanks to absence of tunnel liners and timbering. (Eimco Corp. photo)



JUMBO PLACES TWO CONCRETE PIPE SECTIONS at a time. Two sets of winches and lines are mounted on the rig for that purpose. Jumbo holds these sections in place while a rock cradle is jetted under them.

Jumbo places ocean outfall for Honolulu sewage

A 50-FT.-HIGH JUMBO with tubular steel legs resting on the ocean bottom placed pipe sections comprising Honolulu's new ocean outfall. The jumbo resists heavy swells that might have impaired the stability of barges, had a barge-placing system been used. The jumbo is also resistant to teredo attack that would make undesirable the use of a temporary timber trestle.

The 3,400-ft-long, 78-in. dia. reinforced-concrete outfall will carry all of Honolulu's sewage to a 50-ft offshore depth where swift currents will quickly carry it away. Thus, the city's beaches will be protected and a valuable tourist attraction maintained. In addition, construction of costly treatment works is made unnecessary by the outfall.

Here's how the pipe-laying worked: The first 700 ft of the outfall was laid from a temporary trestle. This took the outfall about 300 ft beyond the edge of a tropical coral reef that fronts Honolulu at this point.

Next, a barge-mounted heavy crane excavated part of a trench in the sandy ocean bottom. The excavation was long enough to take two 16-ft sections of pipe and deep enough to cover the pipe. Then the crane separately lifted two sections of pipe off a barge and placed them in the bottom of the trench about 4 ft from the pipe already laid. A space of about 4 ft was left between these joints.

The jumbo then was lifted over this part of the trench. It was positioned so that the two pipe lengths could be picked up and carefully moved into place.

The jumbo was equipped with two sets of lines and air-operated winches —one for each of the two pipe sections to be placed at one time. A diver directed the securing of the joints.

While the jumbo held the two pipe sections securely in position, a rock cradle was placed under them by means of two 12-in. dia elephant trunks, one on each side. Divers using high pressure hydraulic hoses packed the ballast into place under the pipe.

Tendency of under-water outfalls to move and open at the joints has made design and construction of such units a ticklish affair. Placing the outfall in a trench with a good foundation makes relatively certain that the pipe will not move. Thus, the joints are protected. Sand drifting over the pipeline effectively seals it in.

Now, all this sounds relatively simple; and it was until the job was almost finished. A heavy storm brought on rougher seas than anticipated and collapsed the jumbo with only two lengths of pipe to go. The remaining two sections were placed by a new smaller A-frame type jumbo that was entirely under water. This new unit was made up of pieces salvaged from the old.

Both city and contractor were pleased with the jumbo operation; the contractor because the rig cost less than $10,000. Besides that, average rate of laying pipe was two lengths per day with the best day being four lengths. That's considered good for ocean outfall work.

City officials are happy because they figure this under-water jumbo has saved them about $300,000 over any other system.

The basic idea of constructing an ocean pipeline by means of a simple frame resting on the bottom was developed by George C. Wallace, division engineer, City and County of Honolulu, who has applied for patents.

Decision to use the idea was made by Ernest C. Gray, vice-president of the Hawaiian Dredging Co., contractor on the job. The jumbo was constructed and its operation supervised by Bert Croze, Hawaiian Dredging Co. superintendent.

The reinforced concrete pipe was made in Honolulu by Collins Pipe and Construction Co. Joints are the rubber gasket type patented by the American Lock Joint Co.

The 3,400-ft outfall replaces a 2,000-ft existing outfall that is a mile closer to famous Waikiki Beach. Metcalf & Eddy, Boston consulting engineers, recommended this change in the course of their survey of Honolulu's sewage problems. They figure it will remove any possibility of pollution of the beaches and thus insure the continued safety of one of Hawaii's great tourist assets.

The outfall is part of a 10-year $23,000,000 sewage system modernization and extension program. Two pumping stations bring sewage from the city into the outfall. Earlier plans to include in the program an expensive treatment plant were abandoned as unnecessary because it has been demonstrated that the ocean currents effectively carry the waste away.

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TUBE-TURN Welding Tees are drawn from seamless tubing to a barrel shape—the shape every tee wants to assume under pressure. This feature, together with the generous crotch radius and thickness, explains why TUBE-TURN Welding Tees withstand more pressure without yielding. Bursting pressures obtained in tests of representative fittings have averaged more than 25% higher than required by standard codes. Here's extra quality at no extra cost.

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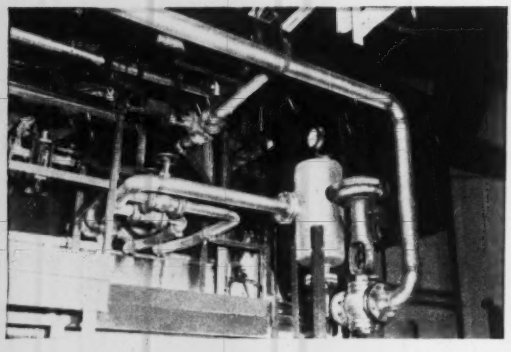
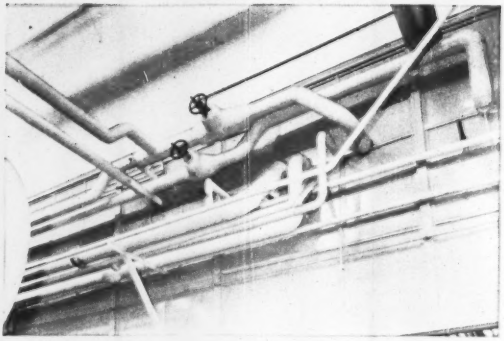
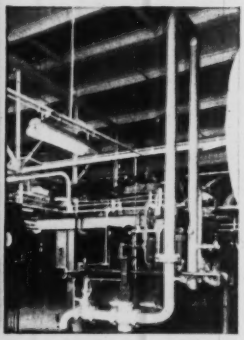
Penicillin processor welds stainless steel piping ½" and up



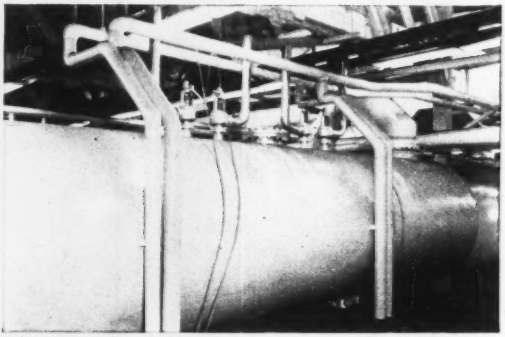
Advanced facilities in plants and laboratories help Eli Lilly and Co., Indianapolis, turn out a high volume of pharmaceuticals, biologicals, and antibiotics. This new filtration unit in the penicillin processing system uses 3" and 4" Type 316 stainless steel—chosen to resist corrosive action. Welded system with TUBE-TURN Welding Fittings and Flanges was chosen to provide maximum strength and eliminate leakage.



Neat appearance of insulated lines demonstrates simplicity of welded piping. Insulation was applied quickly over pipe and TUBE-TURN Welding Fittings, with no awkward joints to work around. Maintenance men know that insulation will last, with no leakage to cause deterioration. Cleanliness and neatness are prime requirements in Eli Lilly plants.



Up in the air goes a loop welded with 6" pipe, joined with TUBE-TURN Welding Fittings and Flanges. Structural strength here is a must. In this fermentation tank where life-saving penicillin is made, tiny lines of ½", as well as larger sizes, are welded. Comparable modern facilities are provided for making streptomycin and other products.



Lines to process vessel fit neatly into a small space when TUBE-TURN Welding Elbows make the turns. Eli Lilly engineers specified process piping for optimum flow conditions, compactness, and elimination of leakage.

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- **Designers and builders encouraged to employ newest techniques**
- **Regulations limited to performance requirements**
- **Methods of compliance to be given in a separate book**
- **This manual to be kept up to date**

Emil J. Szendy

Technical Director
New York State
Building Code Commission
New York, N. Y.

NOW UNDER STUDY is a proposed state building code applicable to one and two-family dwellings that more nearly approximates a performance-standards type code than any building code prepared to date. Prepared for the New York State Building Code Commission, these regulations have been limited, to the maximum practicable extent, to performance requirements for safety and sanitation in buildings.

In most codes, the portions dealing with methods of compliance take up many pages and involve the least flexible provisions. These have been omitted from the new code. Instead, methods of compliance have been incorporated in a separate book — a "Code Manual." Here they are available, as a useful guide, to the architect, engineer, builder, and building official, without being frozen into law. This book, which will be issued in looseleaf form, will be susceptible to change and to addition of other acceptable methods of construction, without revision of the code.

• Manual shows approved methods— The commissioner has relegated to the manual "accepted engineering practice" and "generally accepted standards," recognizing that these do not constitute basic requirements for safety, but are the implementation thereof. The manual indicates, by simple reference, acceptability of construction meeting the AISC "Specification for Structural Steel," the ACI "Building Code Requirements for Reinforced Concrete," and similar recognized and accepted standards.

For methods of construction not formally defined in standards, but established by successful use for many years, such as wood-frame construction, descriptions and drawings are presented in the manual to indicate acceptable constructions.

In addition to methods of compliance, the manual contains test procedures for evaluation of alternate methods of construction. It also offers much pertinent data, such as joist-span tables and fire-resistance ratings of building construction.

At present, about two-fifths of the manual—nearly 90 pages—is a graphic presentation of requirements. This avoids the complex, and frequently verbose, language employed in most existing codes.

In issuing the manual for review, the commission stated that: "The standards in the manual will be revised as new information or test data become available, and will be supplemented by additional standards, indicating other methods of acceptable compliance, as the need for such additional standards becomes apparent.

"The commission intends to maintain the manual as an up-to-date flexible implementation of code requirements, and believes that both compliance and enforcement will be facilitated by its use."

• Objectives— The code has been made possible by the unusual authority conferred in 1949 by the state legislature upon the State Building Code Commission. This group consists of five members having staggered 10-year terms of office: Col. Edward J. McGrew, Jr., engineer, chairman (now on military leave); George Bain Cummings, architect, vice-chairman; Walker S. Lee, architect and engineer (formerly building commissioner of Rochester, N. Y.); Ralph A. Lehr, lawyer; and William Lescaze, architect.

The commission is empowered to adopt regulations relating to the construction of all classes of buildings and the installation of equipment in these structures. It may also prescribe standards or requirements for materials to be used.

Specific objectives of and standards for the New York State Building Construction Code are stated in the enabling act:

1. To provide reasonably uniform standards and requirements for construction and construction materials, consonant with accepted standards of engineering and fire-prevention practices.

2. To formulate such standards and requirements, so far as may be practicable, in terms of performance objectives, so as to make adequate performance for the use intended the test of acceptability.

3. To permit to the fullest extent feasible, use of modern technical methods, devices and improvements which tend to reduce the cost of construction without substantially affecting reasonable requirements for the health, safety and security of the occupants or users of buildings.

4. To encourage, so far as may be practicable, the standardization of construction practices, methods, equipment, material and techniques.

5. To eliminate restrictive, obsolete, conflicting and unnecessary building requirements which tend to increase unnecessarily construction costs or retard unnecessarily the use of new materials, or provide unwarranted preferential treatment to types or classes of materials or products or methods of construction.

In accordance with its mandate, the commission is preparing and will periodically review and revise performance-type codes. It will also prepare, and periodically revise and supplement, code manuals to assist the building industry and the enforcement officer in interpretation, application, and enforcement of the codes. The code and manual now being studied are the first of these documents.

In addition, the commission will furnish to municipalities, on request, technical assistance in the interpretation of codes and code manuals. It will organize and operate state boards of review, acting on appeals and on requested variances from the codes.

And as an important service to the building industry and to enforcement officers, it will examine proprietary products and certify their acceptability if they meet code requirements.

• **Basic considerations**—The term "performance requirements" has been loosely used. A close interpretation of its true meaning would limit codes strictly to objectives. However, a building code, to be interpretable and enforceable, must contain a basis for evaluation of methods of compliance.

Writing a true performance-type code and developing its accompanying manual has been a difficult pioneering job. The majority of the so-called performance-type codes extant today, because of the demand that specific "yardsticks" be included within the code itself, are combinations of performance requirements and specification requirements.

In formulating enforceable performance requirements, the commission determined that the code should contain objectives and performance-standards type criteria of acceptability of methods of compliance. Objectives are expressed as the "General Requirements" of the code and are followed directly by criteria of acceptability. In the majority of cases, these criteria of acceptability fall into two categories—load and behavior limits.

Load, under the code, is sometimes expressed and sometimes implied. The required assumed design loads for structures are directly specified. For fire safety, the load is the implied potential incidence of fire, which may vary depending upon the location of the building within or without the fire limits. For plumbing, the load is the customary normal use of the equipment. For habitable space, the load is the normal utilization thereof.

Behavior limits can be considered the "tolerances" permissible under the code. For structures, they are expressed in terms of maximum permissible deformation under design loads and multiples of design loads. Under 1½ times design load, elements of a structure are required to sustain the loading without structural damage; and under 2 times design load, they must sustain the loading without structural failure.

For fire safety, behavior limits for construction features that are potential sources of ignition, such as chimneys or heating appliances, are expressed in terms of maximum permissible temperature rise on adjacent combustible surfaces. Where control of potential fire spread is deemed necessary, behavior limits are expressed in terms of minimum distance separations between buildings and minimum fire-resistive separations between parts of buildings. The latter is given in terms of required fire-resistance rating.

In most codes, behavior limits are expressed in specification-type requirements and in terms of specific materials. Development of performance-standards type behavior limits, expressed in general, but interpretable and enforceable terms, proved to be no easy task.

• **Enforcement**—The act establishing the New York State Building Code Commission originally provided that the regulations comprising the code, when filed with the Secretary of State, should be an acceptable alternate to existing building codes. However, the legislative body of a municipality could elect within 30 days of the publication of public hearings not to accept the state code. A recent amendment of the law changed the procedure, making acceptance optional. A municipality may vote at any time to accept the code.

Administration and enforcement are in the hands of local building officials. Since the manual is not part of the code, local enforcement officials are not limited in interpretation of the code to methods of compliance illustrated in the manual. Enforcement, therefore, can have the flexibility inherent in the performance provisions of the code itself.

CONSULTANTS ON THE CODE

Structural requirements — Herbert L. Whittemore, formerly with National Bureau of Standards, now retired.

Fire safety—S. H. Ingberg, retired chief of the NBS fire-resistance section.

Plumbing—John L. French and Robert S. Wyly, NBS hydraulic laboratory.

Snow and wind loads—Jerome Spar and Gardner Emmons, New York University.

Seismic data—Daniel T. O'Connell, College of the City of New York.

General review—John O. Merrill, Skidmore, Owings & Merrill; George E. Strehan, consultant, Building Officials Conference of America; George N. Thompson, chief, NBS codes and specifications section; Walter C. Voss, head, department of building engineering and construction, Massachusetts Institute of Technology; and Ralph E. Winslow, head, department of architecture, Rensselaer Polytechnic Institute.

Related fields—Dr. C-E. A. Winslow, chairman, American Public Health Association Committee on Hygiene; Malcome C. Hope and Ralph J. Johnson, U.S. Public Health Service; Dean F. M. Dawson, chairman, and Vincent T. Manas, executive secretary, committee preparing the National Plumbing Code.

Uniformity of interpretation will be fostered by the manual and by operation of state boards of review organized and operated by the commission. Those aggrieved by action or lack of action of a local enforcement officer, and those desiring variances from the code, may appeal to such boards of review. Given satisfactory proof, the boards, after a public hearing, may reverse, modify or annul any ruling of any state agency or local building department affecting construction of any building for which plans have been filed under the state code.

The commission is not an enforcement agency; it is primarily a service group, organized to establish and disseminate building regulations, standards, and pertinent data for the use of local building departments. As a continuing agency, it can provide, on a state-wide basis, material that the individual municipality could not otherwise procure and assemble, because of insufficient money.

In centralizing analysis and research, the commission simplifies the problem of securing acceptance for worthwhile products of building-material manufacturers. By making carefully studied performance-standards type codes available to the municipalities, the commission will contribute greatly to the elimination of restrictive specification-type requirements that add unnecessarily to construction costs, and indirectly prohibit utilization of new products.

The commission will endeavor to keep in touch with all elements of the building industry, and especially with organizations doing authoritative research, to keep abreast of new developments. This will enable it to keep codes and manuals up to date.

• **Suggestions requested**—About 3,500 copies of the present draft of the code, which applies only to one and two-family dwellings, and the manual, have been issued for study and review to the municipalities of the state and to more than a thousand interested groups, including architectural and engineering societies, building-trades unions, contractors' associations, mortgage-finance people, and other business, trade and professional organizations. Comments, criticisms, and suggestions have been solicited. Architectural and engineering organizations have appointed special code committees to present viewpoints of the associations.

Comments received to date indicate favorable reaction to the performance-standards type code and the manual. There has been almost universal approval of the use of graphic presentation in the manual.

Easy-to-install drain wells placed behind leaking levee

W. R. Jones
Resident Engineer
Corps of Engineers, Baltimore District

SEEPAGE RELIEF WELLS behind an existing levee on the North Branch of the Susquehanna River near Kingston, Pa., have been speedily installed by a modified pile-driving technique.

An 18-in. steel mandrel—with a conical cast-steel point that remains in the ground—was driven to receive a 12-in. corrugated steel pipe, perforated throughout that portion of its length within the seepage stratum. The mandrel was pulled, and the installed drain pipe was tied into a collector system.

A serious seepage condition needing control had been observed through several periods of high river stage by the Corps of Engineers, builders of the flood protection system. Subsurface investigation indicated that seepage was being carried through a stratum of sandy gravel 5 to 22 ft thick. The top of this gravel stratum was 18 to 30 ft below the base of the levee.

To control seepage, 24 relief wells were placed on 100-ft centers along the landside toe of the levee. Wells were connected to a collector sewer which carries seepage to nearby Church Street Pumping Station for discharge by pump into the river.

The relief wells were 14-ga corrugated metal pipe with an asbestos-bonded bituminous coating. Depths varied from 32 to 44 ft, and the lower perforated section varied from 6 to 22 ft in length.

• **Installation**—After a pit had been excavated and sheeted for the connection of the relief well to the collector system, a hollow cast-steel driving point for the 18-in. dia open steel casing was set in place with a templet. This cone-shaped driving point was cast with a hole at its tip for jetting—which was unnecessary.

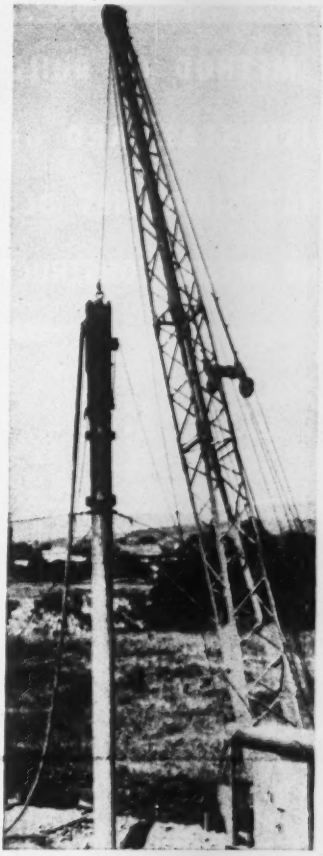
The 18-in. mandrel was set on the driving point and driven to required penetration by a steam hammer supported in a head guide fastened to the top of the mandrel. The 42-in. long point was driven until its top was about 1 ft below the bottom of the relief well, and the point and mandrel were then backfilled with washed gravel to the bottom elevation of the well.

The corrugated-pipe relief well (below the tee connection to the collector) was then lowered into the mandrel, and the space between the corrugated pipe and the casing was backfilled with washed gravel. This gravel held the corrugated pipe and the cast-steel point in place as the mandrel was pulled by an extractor.

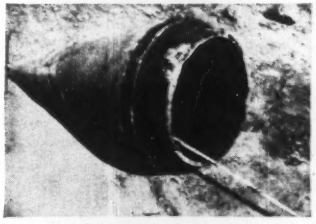
The tee connection to the collector system and the top portion of the well were placed, and the pit was backfilled with impervious material.

Except for excavating and backfilling the pit, this method enabled a crew to install one well each 8-hr day. Wells were later tested and surged with a deep-well turbine pump.

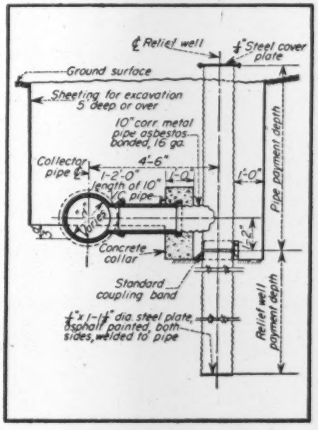
The Baltimore District, Corps of Engineers, under Col. A. C. Welling, district engineer, designed the relief well system and supervised construction. The contractor was H. E. Wagner Construction Co., Kingston, Pa., with Norman Douglas, superintendent. The author was resident engineer on the project.



HAMMER GUIDE is clamped right on the mandrel. Mandrel is guyed by 4 lines.



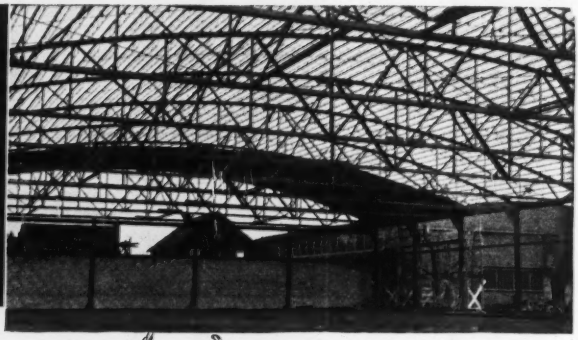
CONE-SHAPED POINT for driving mandrel was left in ground. It is cast steel.



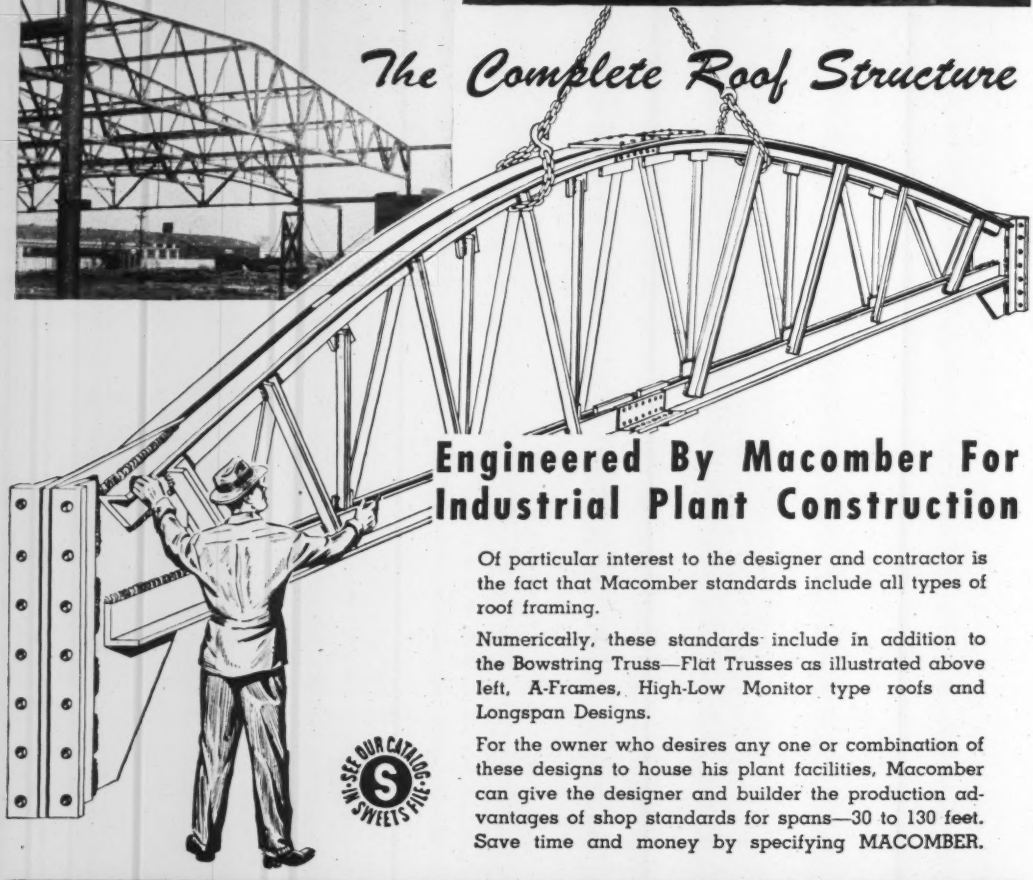
VERTICAL SECTION at a typical relief well shows coupling of installed pipe tee.

LOWERING RELIEF WELL into temporarily driven casing. Note coupling.

A METHOD OF BUILDING WITH STANDARD UNITS THAT SIMPLIFIES DESIGN AND SPEEDS CONSTRUCTION



The Complete Roof Structure



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Do salts used for ice control speed rusting of automobiles?

Sharp disagreement among public officials who have studied this question points to the need for a more comprehensive study

ASK ANYONE who has driven an automobile where salts are used to remove ice and snow from the streets whether those salts have damaged the fenders, and you will usually get a very positive affirmative answer—especially if the car happens to be an old one. But if you ask those who have done some research on the subject, you will get quite contradictory replies.

For example a committee appointed by the Engineering Society of Detroit to study the effect of salts states: "There is no real evidence that the use of rock salt for ice control has any material effect upon the corrosion of automobiles. Abrasion and the presence of moisture, with or without salt content, are prime factors in accelerating corrosion."

Quite opposite conclusions were reached as a result of a similar study at Akron, Ohio. M. L. Davis, director of public service for that city, says: "To say that salt water is not corrosive is not only out of step with the facts, but also ridiculous. Anyone who has ever been near the seashore, or worked in a salt refinery or pickle factory, knows that salt water is very corrosive. Every motorist in Akron knows this."

Similar disagreement is found concerning the effectiveness of rust inhibitors that have been added to the salts in some cities. Akron's research staff found them to be effective, and Akron is continuing to use them. The research division of the Michigan Highway Department, on the other hand, found that the concentration of inhibitor required to give satisfactory protection cannot be supplied by adding inhibitors to salts used on pavements at the 1 to 100 parts rate recommended by the manufacturers of inhibitors. Also, corrosion rates were found to be higher for weak concentrations of inhibitor than when no inhibitor was present.

• Moisture blamed for corrosion—Probably the most comprehensive study of the effect of salt in accelerating corrosion is one made by the Development and Research Division of the International Nickel Co. That study related to all types of corrosion of interest to automotive engineers.

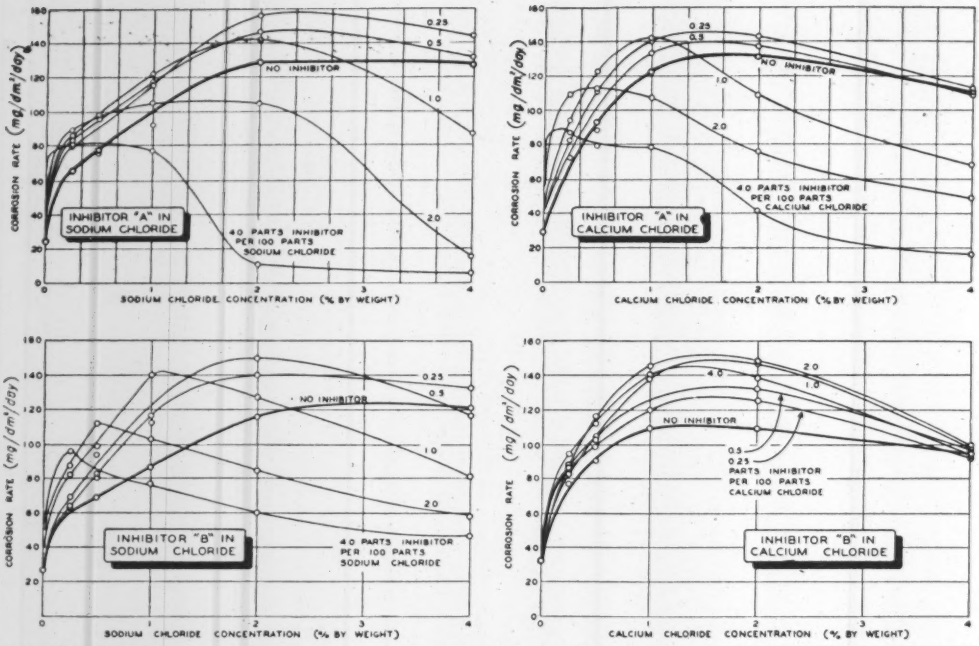
Concerning corrosion resulting from salts used on pavements, this report states: "When sodium chloride solutions varying from pure water to concentrated brines are used for a conventional salt spray test, the greatest corrosion of bare steel occurs with a very small percentage of chloride, and the pure water is more corrosive than all concentrations above 1 or 2 percent sodium chloride. The explanation of this phenomenon is based on the fact that the solubility of oxygen in sodium chloride solutions decreases as the chloride concentration increases.

"This observation helps explain why steel specimens exposed to atmospheric corrosion without contact with brine were corroded twice as much as duplicate specimens attached under a test car driven over a salt-treated road and garaged in a humid atmosphere. Also, field surveys have shown almost as much corrosion of cars in areas where salt treatments of roads are never employed as in regions where they are used regularly. Furthermore, surfaces located where they are shielded from salt splashed from the road have been found to suffer as much damage as those freely exposed to such splash.

"Apparently the humidity of the atmosphere where a car is kept or parked is a more important factor than salt treatment of roads in determining the extent of corrosion of automobile underbodies. In this connection, however, it is important to note that salt that may adhere to the car will have an indirect adverse effect through keeping the metal moist as a result of the hygroscopic properties of the salt—calcium chloride being worse than sodium chloride in this respect. This means, in effect, that corrosion will occur at a lower relative humidity when there is salt on the metal than when salt is absent."

In summarizing its findings the research staff of the International Nickel Co. said, "It seems reasonable to conclude that the danger of accelerated corrosion from the use of salts for road treatment—and especially if the salt contains inhibitors—is not great enough to recommend the discontinuance of these treat-

THIS CORROSION, according to Akron's research staff, was due to the use of salts on the city's streets without the addition of a rust inhibitor.


CORROSION RATE (mg/dm²/day)
INHIBITOR "A" IN SODIUM CHLORIDE
NO INHIBITOR
0.25
0.5
1.0
2.0
40 PARTS INHIBITOR PER 100 PARTS SODIUM CHLORIDE
SODIUM CHLORIDE CONCENTRATION (% BY WEIGHT)
INHIBITOR "A" IN CALCIUM CHLORIDE
40 PARTS INHIBITOR PER 100 PARTS CALCIUM CHLORIDE
CALCIUM CHLORIDE CONCENTRATION (% BY WEIGHT)
INHIBITOR "B" IN SODIUM CHLORIDE
INHIBITOR "B" IN CALCIUM CHLORIDE
4.0
0.25 PARTS INHIBITOR PER 100 PARTS CALCIUM CHLORIDE

RUST INHIBITORS must be in concentrations above 1 part in 100 to be effective in the range of concentrations of salts usually found on highways (0 to 2 percent), according to the findings of the Michigan Highway Department.

ments, which are so valuable in preventing accidents on icy roads and for increasing the comfort of travel on dusty ones."

• **Michigan studies**—A more recent study by the Testing and Research Division of the Michigan Highway Department found no significant difference in the corrosive effects of sodium chloride or calcium chloride solutions. The Michigan Research Division, however, did confirm the findings of the International Nickel Co.'s staff as to the severe effect of weak solutions. The maximum occurred in concentrations from zero to 2 percent, which are those usually found on highway pavements. Higher concentrations, the Michigan staff said, were found to be less corrosive than pure water.

These determinations were made in the laboratory using sheet steel classified as SAE 1008, alternate immersion for 14 days at temperatures close to 80 deg F. The Michigan field studies were not conclusive according to the Michigan staff due to the use of too few test panels.

• **Inhibitors not favored**—These Michigan studies included the use of rust inhibitors, both cromates and the phosphate type. They are not identified in the accompanying charts, which are reproduced from the Michigan report.

The research staff, in its report, said that the quantity of inhibitor necessary to give satisfactory protection in the dilute concentrations that are present on highways cannot be supplied by adding inhibitor to salt in the ratio of 1 to 100. Effective inhibition would require many times that amount, the staff stated, adding that the use of insufficient amounts of inhibitor actually increases corrosion in dilute salt solutions.

The Michigan staff also stated that protective films cannot be built up by continuous exposure of the metal to solutions of low inhibitor concentrations.

Anodic inhibitors, such as the chromates and dichromates, the Michigan staff found, caused pitting rather than overall corrosion. "Although pitting corrosion takes place over a small area and does not cause a great loss in weight of a test panel, it constitutes an intensive attack on a small area and can produce deep holes in a relatively short time. This pitting was observed in 2 percent brines containing as much as ten parts of sodium chromate per 100 parts of calcium chloride.

"Another disadvantage in the use of chromates as inhibitors is their possible toxic effect on persons handling the chemicals and children and animals coming in contact with pools of the solution."

Based on the information obtained in this study, the staff of the research laboratory of the Michigan State Highway Department states that "The costly addition of corrosion inhibitors to chlorides used for ice control is not considered feasible."

• **Inhibitors tested at Detroit**—A discussion of the use of inhibitors with salt also was included in the report made under the auspices of the Engineering Society of Detroit. The committee making that study reviewed the various types of inhibitors used in water circulating systems and in freezers but found that most of them have no application in the highway ice-control field. As to the chromates, the committee stated that they are toxic and must be handled with care, and that the yellow color, which turns green on oxidization, may lead to serious objections by the public. It noted that the cost is high.

In its conclusions, the Detroit committee states that by coincidence the increased use of salt for ice control in recent years coincided with the longer use of cars resulting from the war, and

that as a result, the use of salt was blamed for much corrosion which was really the result of increased age and changed body design of automobiles.

• **Extensive studies at Akron**—Akron's studies of the effect of salts on car bodies and of the usefulness of inhibitors in checking corrosions were made during the winters of 1947-48 and 1948-49. Chromates were used in the 1947-48 studies, 200 lb of sodium dichromate being added to each ton of the "refuse salt" used normally in Akron. Careful observation was made of the condition of 116 automobiles operated over the streets of Akron during the winter, and these cars were compared with similar cars operated in areas where no inhibitor was used.

From these studies it was concluded that chromates would definitely reduce salt corrosion, also that chromates arrest the corrosion at the body and fender joints that continues throughout the summer every time the car becomes wet. Laboratory studies confirmed this and indicated that a 2 percent admixture of sodium dichromate was probably the optimum mixture.

Because of the scarcity of dichromates, and because dichromates are somewhat toxic, the Akron staff, during the winter of 1948-49, substituted "Banox," a commercial anti-corrosive material which the staff describes as a "vitreous metaphosphate compound." According to the staff's laboratory tests, this inhibitor is equal in every respect to sodium dichromate and in addition is non-toxic. It was added to the salt at a rate of 1 percent by weight.

Also used was another commercial anti-corrosive additive of the polyphosphate family sold under the trade name of "Nalco 818-C." The Akron staff states that both laboratory and field tests of this material indicated that it is effective as an anti-corrosive and is comparable to Banox, also that it is safe for use on city streets and highways.

Mr. Davis, in a report he made in 1949 to the American Public Works Association, stated that tests made by the city of Rochester, N. Y., in the winter of 1948-49, indicate that the corrosion rate of steel test panels installed on police cars, buses and city trucks was about 40 percent less when "Nalco 818-C" was used than was the rate on similar test panels installed on cars in an adjoining city where salt was used without an inhibitor. He also stated that the addition of an alkali phosphate—such as either one of the two commercial compounds under test—to a salt solution greatly increases its penetrating power in giving protection to joints and crevices in an automobile body.

Recently, in comment to this journal, Mr. Davis said that phosphate inhibitors are preferable because they have been found more effective, are lower in cost and are more readily available. He added that his staff knows of no complaints arising from the use of chromate inhibitors as being responsible for staining clothing and skin irritations while they were being used in Akron.

Concerning the results of the salt and fresh water spray tests reported by the International Nickel Company, Mr. Davis holds that "those laboratory findings are not supported by actual experience. Automobiles driven in cities where de-icing salt is used rust much more rapidly than those not exposed to salt. Our own experience has established this beyond question."

• **Controlled field test needed**—This lack of agreement between laboratory tests, where conditions can be carefully controlled, and field test, where conditions are difficult to control, points to the need for field tests on new automobiles, or at least on pairs of automobile wheels and fenders, conducted in such a way that conditions can be controlled nearly as closely as they can be in a laboratory. This would permit checking on such questions as the effect of atmospheric humidity on the rate of corrosion.

Notes on legal decisions

Summaries of decisions relating to construction work prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill Book Co.)

Ambiguous contracts

A contract for the erection of a building provided: "The contractor agrees to provide all the labor and material and to do all things necessary for the proper construction and completion of the work shown and described on drawings bearing title, Bay Shore Gardens and numbered 000 and in specifications bearing same title, the pages of which are numbered 000." The agreement further provided that: "In consideration of the performance of the contract, the owner agrees to pay the contractor, in current funds, as compensation for his services hereunder ten percent (10%) which shall be paid as follows: monthly."

The contract was drawn up on a printed form of agreement issued by the American Institute Of Architects, upon which there was a notation: "For use when the cost of the work plus a fee forms the basis of payment."

The contract did not set forth the time when the work was to be started. No work was done on the job, and over two years after the contract was entered into, the owner sold the land and the project was abandoned. The contractor then brought an action to recover damages for breach of contract.[1]

The owner made an application to the court to dismiss the complaint, claiming that no valid contract existed since the terms of the alleged contract were too vague to be enforceable, in that it did not definitely describe the plans and specifications and did not provide that the contractor was to receive as compensation, 10% of the cost of the work, but only provided that he was to receive 10%.

The court refused to dismiss the complaint, holding that while the language of the contract might be ambiguous, the real intent of the parties might be determined at the trial after taking the testimony of the parties.

(1) Fischer-Malik, Inc. v 47-71 Main Street Corp., et al., Supreme Court, Suffolk County, N. Y. May 11, 1950, affirmed on Appeal.

Damages for delayed performance

The court, in its opinion in a recent case[1] involving the right of the person for whom the work was being done to recover damages for delayed performance, stated: "It seems to be well settled that the owner in building and construction contracts does not lose or forfeit his right to damages by permitting the contractor to complete the work after the expiration of the time limit fixed by the contract.[2]"

"Where time is of the essence of the contract and the breach material, the owner is put to an election of continuing performance or of ceasing to perform and any action indicating an intention to continue will operate as a conclusive choice not depriving him of action for the breach that has already taken place, but depriving him only of any excuse for ceasing performance on his own part.[3]"

(1) Western Irrigation Co. v Reeves County Land Co., 233 S.W.2d 589. (Court of Civil Appeals of Texas. Aug. 2, 1950.)
(2) 7 Tex. Jur. p. 588, sec. 38; 9 Am. Jur. p. 59, sec. 48; 17 C.J.S., Contracts, sec. 493, p. 998; Annotation 5 L.R.A., p. 272; Phillips, etc., Const. Co. v Seymour, 91 U.S. 646, 23 L.Ed. 341.
(3) Williston on Contracts, Vol. III, sec. 1334, p. 2383; See also Annotation, 143 A.L.R. 489.

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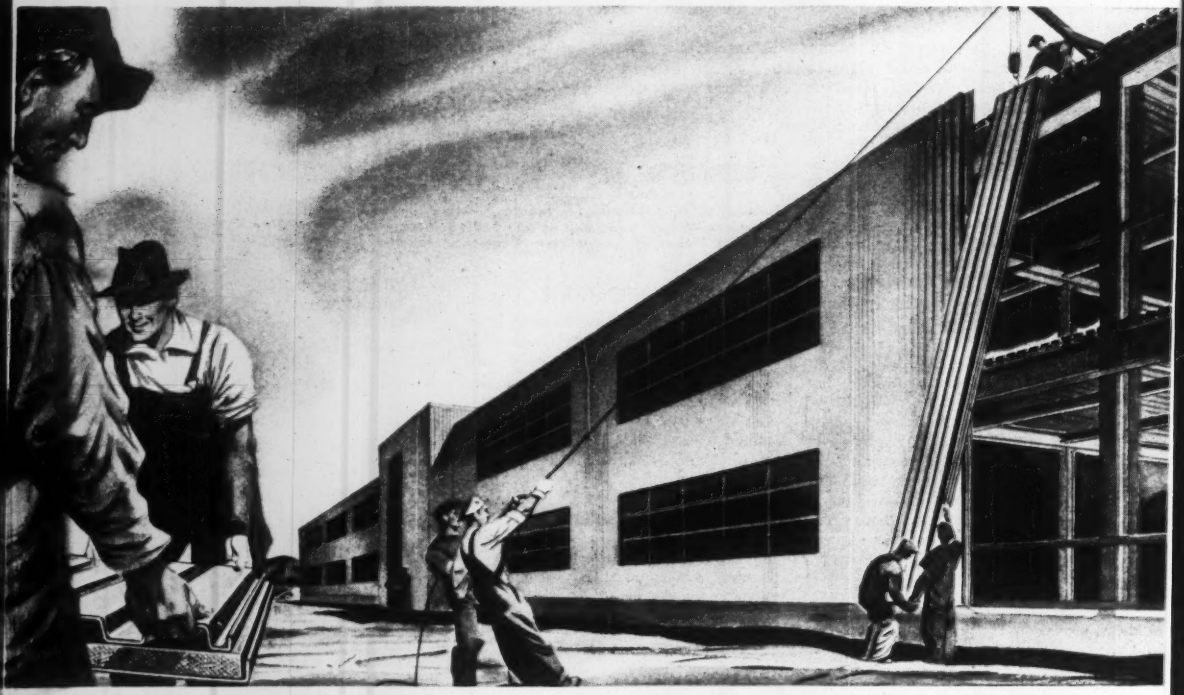

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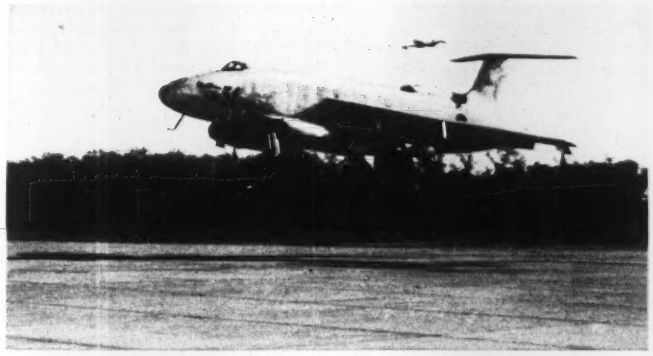

Tailoring airfields for modern planes

AIR FORCE FIELDS in the present big expansion program are tailored to fit the planes that will use them: The takeoff and landing characteristics of the aircraft determine the design of the runway and the field.

In the Zone of Interior (nominally the United States) and for other locations where the facilities are to be permanent, fields are designed to serve all types and models of planes in an aircraft group—such as fighters, bombers, trainers or cargo ships. The plane with the most severe characteristics sets the requirements for a group field. Beyond that, the design of many of the fields is made sufficiently flexible to allow planes from other groups to use the runways in an emergency.

For overseas construction—outside the Zone of Interior—precise fitting of the field to specific aircraft becomes more pronounced. No longer do Air Force engineers use stock runway sizes—one for fighters, another for medium bombers, and so on—with all runway lengths increased by the same fixed percentage for each 1,000-ft. step-up in elevation.

• **Planes are criteria**—Since before Korea, the Air Force has been planning each field for its specific mission—to serve planes with known takeoff and landing characteristics.

For heavier aircraft, one runway to a field is the rule, at least in the initial construction—not three or four as was common in War II. Only when the traffic load requires added capacity does the Air Force put in parallel strips. Runways in more than one direction are used where strong shifting winds demand them, particularly for light aircraft.

Plane characteristics set the width of the runway, as well as the length. Large aircraft generally get wider runway pavements—up to 300 ft. Smaller planes operate on narrower strips—down to 150-ft. minimum.

Present practice puts pavement only where the airplane runs. No strength is built into the shoulders. Alongside runways, shoulders are fine-graded 200-ft. wide and turfed if possible—otherwise oiled—to reduce erosion and dust. Obstructions are removed for 750 ft. from the center line of the runway. The cleared area beyond the shoulders is rough-graded to a maximum gradient of 10 pc.

• **Accurate lengths**—Development of jet planes and heavy bombers called for an accurate method of computing runway length. For the various aircraft in use today, the increase in takeoff distance varies from 3 to about 15 pc. for each 1,000-ft. increase in elevation. A temperature rise from the standard 59 deg. F to 100 deg. F. lengthens the takeoff distance from 15 to 30 pc. for different planes.

Computation of runway length starts with known takeoff and landing distances for the plane at sea level and 59 deg. F. These distances are adjusted for the elevation of the field and the average maximum temperature in the hottest month of the year. The figures are then increased by the proper safety factor (25 to 100 pc.) depending on the use category of the field. To the landing length thus arrived at is added a fixed 2,000 ft. to take care of instrument approaches. The larger final figure (for takeoff distance or landing distance) sets the runway length.

Standard safety factors for both takeoff and landing are these: 100 pc. for training fields; 75 pc. for permanent-type fields such as are built in the U.S., and from 25 pc. (emergency) to 75 pc. for fields in theaters of operation, depending on the construction effort required and the time the fields will be occupied.

Runway lengths in the U.S. for standard conditions (sea level and 59 deg. F.) range from about 5,000 ft. for trainers to more than 10,000 ft. for combat aircraft. Heavier planes and jet engines have greatly increased runway length requirements. In some cases, lighter aircraft impose stiffer requirements than heavy aircraft for length of runway and thickness of pavement.

• **Pavement thickness**—Heavier gross loads and higher tire pressures have increased pavement thickness requirements. Since War II, gross weights have more than doubled for bombers. Use of twin-wheel and twin-tandem landing gear has only partially relieved the pavement construction problem. Tire pressures have increased for all types of military aircraft; the War II maximum of 80 psi. has gone up to 200 psi. Contact pressure can be greatly reduced by the use of track gear, but there is no present promise that gear of this type will replace pneumatic tires.

Pavement design methods employed in War II are still in use today for the heavier runways. Curves in the Corps of Engineers manuals are modified from time to time, but they have remained basically unchanged.

Longer and heavier runways have greatly increased the construction effort required. The runway for a modern fighter takes 4½ battalion months to build, as compared with 1½ months for a War II plane. For this category of aircraft, the runway length has increased from 4,000 to more than 10,000 ft., and the pavement now must carry a plane some 5,000 lb heavier with tire pressures up from 90 to 145 psi.

For a light jet bomber, a modern runway takes twelve battalion months, more than twice the construction effort required for its War II counterpart. A runway for today's jet medium bomber takes ten battalion months, 50 pc. more than the runway for a B-29.

A B-36, with a total weight of 180 tons, requires—on a poor subgrade (CBR 5)—a 32-in. total depth of flexible pavement, including base courses. This runway would take about 18 battalion months to build, more than double the most costly War II runway.

Two battalions are about as many as can work on a runway at one time. The number of battalion months divided by two gives the estimated time for constructing each type of runway. To build a complete airfield requires about two and one-half times the construction effort needed for the runway alone.

READER COMMENT

A305 bars may need hooks

Sir: During the past several months various literature has been circulated in the structural engineering field concerning the new high-bond reinforcing bars meeting American Society for Testing Materials Specification A305. Among this literature were statements to the effect that "hooks are not necessary" or "no hooks are required." This dogmatic statement immediately caught the attention of our chief structural engineer as requiring further investigation. An analysis was made, by applying the issue to the structural design of typical end-spans of tile and joist, wall-bearing floor slabs:

Assume a span of 24 ft (typical classroom bay for school construction) with a total dead and live load of 140 psf. Joists carrying 187 lb per ft are spaced 16-in. o.c.

$$M = \frac{187 \times 24^2}{8{,}000} = 13.4 \text{ ft-kips}$$

V = 2,250 lb; $A_s = 0.98$. Hence, one No. 6 and one No. 7 bar will be used.

The new-type bar gives an allowable bond stress of 250 psi for 2,500-psi concrete (if not more than 12 in. of concrete below the top bars).

It can be seen readily that the bottom straight bar need not be hooked, since the length of embedment required is more than supplied from the point of inflection of the joist. But the moment occurring at the top near the support is maximum at the face of the support, from which point the length of embedment must be furnished in the support. Let the bearing area on the wall be 8 in. Therefore, the total length of embedment possible with no hook is 6 in. (allowing 2 in. for fireproofing); but the length of embedment required is:

$$L = \frac{20{,}000 \times 7/8}{4 \times 250} = 17 \text{ in.}$$

which is far from ample—if a standard hook were used: Hook = 10,000 psi (code).

$$\text{Add. } L = \frac{10{,}000 \times 7/8}{1{,}000} = 8\ 3/4 \text{ in.}$$

which still does not fully meet requirements of the ACI Code. But this is assuming the steel is fully stressed, which would seldom take place, and the above detail is generally accepted (Code—par. 902-B-C.).

Therefore, it seems that in beams and slabs where the moment is comparatively high, hooks must be used to develop to a reasonably close point the embedment requirements.

However, on short spans with light loads, the bar size would decrease rapidly thereby making possible use of bars with no hooks:

$$\text{No. 3 bars} — L_e = \frac{20{,}000 \times 375}{4 \times 250} = 7.5 \text{ in.}$$

No. 4 bars — L = 10 in. *A* 90-deg. bend would possibly be required in end spans.

One prime consideration is the actual amount of rigidity or fixity at the wall support. Our office feels as if none or very little negative moment occurs, which is the concensus of most references. If this is true, sufficient embedment occurs from the point where the tensile stress approaches zero to the support, although in conventional detailing 50% of the area of steel is bent up, to comply with the code (902-C).

Therefore, the conclusions our office drew from this analysis pointed to the fact that many of the advertisements and technical literature placed in the hands of the architectural and engineering offices have misleading and all-inclusive statements therein that should be fully investigated before acceptance as fact.

M. Joseph Hakan
H. Raymond Weeks, Inc.
Durham, N. C.

Concrete good enough?

Sir: I have read with much interest your editorial note on "Lessons from Walnut Lane," (ENR Sept. 28, 1950, p. 21).

I generally agree with your statement, but may I point out that it is not quite correct to say "that the concrete—proportioned and mixed in accord with normal American practice—is better than Gustave Magnel gave it credit for being."

The concrete has been the main point of discussion between myself and the American engineers, both city and contractors' engineers.

I wanted "no-slump concrete," they wanted initially a 4 to 6-in. slump. We compromised on a maximum of 2-in. slump, it being understood that at the moment of prestressing, the crushing resistance on cylinders would be 2.25 times the compressive stress developed at that time.

The test girder, made with the help of a Belgian engineer was perfect, and made in those conditions.

When the Americans were alone and made the next girder themselves, they probably tried to save labor with the result that the beam produced had many defects. More money was spent on photos and telegrams and telephone calls from the States to Belgium than the amount of labor saved. The beam was finally repaired.

For the next beams, time was lost continually in waiting for the concrete to get its strength. At the end of the job, concrete with a 3½-in. slump was used. This liquid concrete may have reduced the labor cost somewhat, but it was one of the reasons why the work took twice as long as it should have. This meant a much bigger loss in overhead charges than the money saved in labor.

I wish to add that vibrating concrete with a slump over 2 in. is useless and even dangerous.

If Americans are to use prestressed concrete (in order to get the same strength as from reinforced concrete by using only half of the concrete and a fifth of the steel) they will have to understand that this requires better than ordinary concrete. One must not save labor up to the point of losing money in repairing defects and in extra overhead charges.

Prestressed concrete has been used on a big scale for only five or six years. It would be childish to think that we already have found the best technique, but as it is, the economy it gives is enormous and its quality far better than what can be obtained by reinforced concrete. Therefore, it is bound to have a great future.

I hope the foregoing remarks will not be considered as unfriendly; the work at the Walnut Lane Bridge has generally been carried out in a perfect way. But how can we learn any lessons about prestressed concrete if we are not fully sincere in writing about it?

G. Magnel
Ghent, Belgium

Welded girder costs

Sir: Re article ENR April 12, 1951, p. 34, the price per lb for the welded steel box girders was quoted as follows by the four lowest bidders for the three bridges in which such girders have been used to date:

Bridge	Bids Opened	Span	Price per Pound (cents)
North Bend	Nov. 14, 1949	110′	16½, 16½, 17, 15
Patton	May 22, 1950	100′	15, 16, 15½, 18
Portage Canal	Apr. 10, 1951	140′	20, 21, 25, 27

In the article the top flange plate thickness noted on the longitudinal section is erroneously marked ¾ in.; it should be ⅞ in. Also, it was originally intended to have the corner trussing bars continuous and bent as note regarding notching vertical stiffeners indicates. However, individual straight bars were substituted in this and subsequent work.

Homer M. Hadley
Consulting Engineer
Seattle, Wash.

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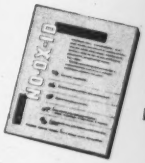

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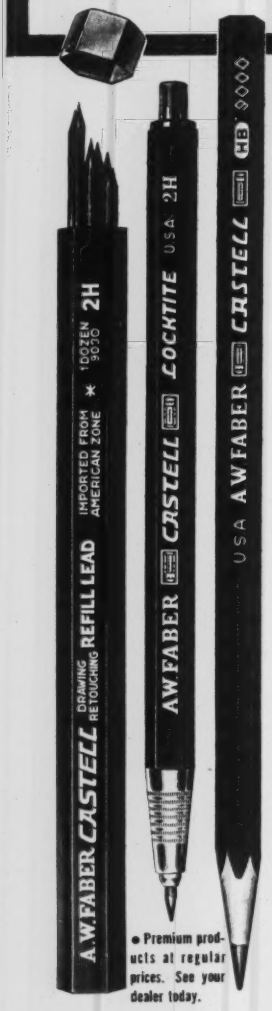

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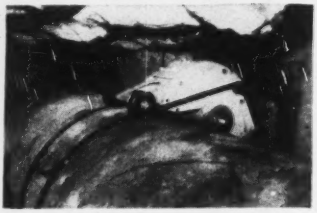


PNEUMATIC PIPE SAW cuts a 42-in. water main in 52 min.

Cast iron water main cut in close quarters

Cutting water mains without interrupting service is an old story to waterworks engineers. However, the Nashville (Tenn.) water department has performed such an operation that they consider noteworthing because of the simplicity of the job despite the tight quarters involved.

To increase pumping capacity, it was necessary to cut an existing 42-in. cast iron line and insert an assembly consisting of one 42-in. valve in the line, together with a tee and a 42-in. valve on the branch of the tee. This cut-in formed the junction between an existing 42-in. filtered water line between the main pumping station and filtration plant, and a new duplicate 42-in line between these points.

The big problem was cramped quarters. The point where the main had to be cut was located under the floor of the pumping station. Moreover, there was only 16-in. clearance between the pipe and a solid foundation wall on one side, and concrete piers on the other.

The contractor used a specially designed pneumatic saw for making the cut. This saw is actually a portable milling machine on wheels. It travels around the pipe making a complete cut in one revolution. It is driven by compressed air under 85-psi pressure. The cutting tool is a high-speed steel slitting saw.

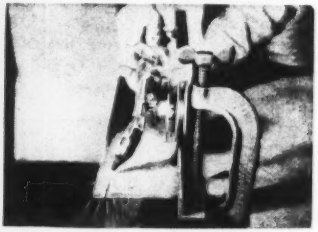
The machine is held tightly against the pipe by a pair of silent-type chains that act as a flexible gear. The machine moves; the chain gear stands still. In making a cut, the cutter is first driven through the pipe wall by a hand feed. Then the machine's clutch is engaged and it travels around the pipe, making the complete cut.

Upon completion of two cuts the section to be removed was pushed out of the line by jacks in bearing against the foundation wall. It was picked up by crane and set on raised skids on top of the ground. A third circumferential cut then was made with one of the saws to reduce the length of the removed section for reinserting in the line to make up the new valve assembly.

To complete the job, the new valve and tee assembly, together with the length of pipe to be reinserted, were placed on rollers and pushed into place in the line. When the complete assembly was in position, there was only ½-in. clearance between the plain ends of the assembly and the cut ends of the 42-in. cast iron line.

The installation was made on a Saturday night during a period of minimum water consumption. The entire job was completed between 10:30 pm and 7 am.

Contractor was the J. B. Michael Co., Nashville; with L. R. Willie, construction superintendent. The saws are made by the E. H. Wachs Co., Chicago. Robert L. Lawrence, Jr. is director and chief engineer of the Nashville Waterworks Department.



GUIDE FOR TORCH CUTTING—Straight-line cuts can be made quickly by clamping the torch to a 4-in. V-belt pulley. Then, by running the pulley along a piece of angle iron, the torch follows a precise, straight line. Be sure to leave about ⅛-in. clearance between the heat shield and hub of the pulley to provide easy rolling.—Linde Air Products Co., New York 17, N. Y.

Reports and Pamphlets

COMPOSTING FOR DISPOSAL OF ORGANIC REFUSE—Technical Bulletin No. 1. Sanitary Engineering Research Project, University of California, Berkeley, Calif.

REPORTS OF COMMITTEE ON ROADSIDE DEVELOPMENT — Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $1.50.

SOIL EXPLORATION AND MAPPING—Bulletin No. 28. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

CALCOLO RAPIDO DEI PONTI AD ARCO—Istituto Poligrafico Dello Stato, Rome, Italy.

RESEARCH AND FACILITIES ST. ANTHONY FALLS HYDRAULIC LABORATORY—Circular No. 5. University of Minnesota, Minneapolis, Minn.

BIBLIOGRAPHY ON INCINERATION OF REFUSE—Technical Bulletin No. 3. Institute of Engineering Research, University of California, Berkeley, Calif.

THE INDUSTRIAL WATER RESOURCES OF THE ST. LOUIS AREA—Industrial Research Bureau, St. Louis Chamber of Commerce, 511 Locust St., St. Louis, Mo.

AMERICAN TRUCKING FACTS—Background information about the trucking industry. American Trucking Associations, Inc., 1424 Sixteenth St., N. W., Washington 6, D. C.

SOLUTIONS FOR ALBUQUERQUE'S TRAFFIC PROBLEMS—Traffic Engineering Division, Automotive Safety Foundation, 700 Hill Building, Washington 5, D. C.

FLOOD CONTROL AND NAVIGATION MAPS OF THE MISSISSIPPI RIVER—18th Edition. Mississippi River Commission, Vicksburg, Miss. Price $2.00.

ETANCHEITE PAR L'ASPHALTE TOITURES-TERRASSES—Office des Asphaltes, 9 Rue Huysmans, Paris VI, France. Price 250 F, plus 35 F postage.

COOPERATIVE HOUSING—United States, Denmark, Holland, Great Britain, Norway, France, Switzerland, Sweden. A bibliography on housing built or managed cooperatively. Compiled by the Housing and Home Finance Agency, Washington, D. C.

CODE FOR PRESSURE PIPING—ASA B31.1-1951—The American Society of Mechanical Engineers, 29 W. 39th St., New York 18, N. Y. Price $3.50.

GENISSIAT—Reprints (in French) of articles describing the design and construction of the Genissiat power project in France. Published in "La Houille Blanche," Rue Paul-Verlaine, Grenoble, France.

LIST OF PUBLICATIONS OF THE WATERWAYS EXPERIMENT STATION, including hydraulic reports of other Corps of Engineers laboratories—Waterways Experiment Station, Vicksburg, Miss.

MECHANISM OF LANDSLIDES—Harvard Soil Mechanics Series No. 36. Department of Engineering, Harvard University, Cambridge, Mass.

NOTES ON THE DESIGN OF EARTH DAMS—Harvard Soil Mechanics Series No. 35. Department of Engineering, Harvard University, Cambridge, Mass.

EQUILIBRIUM EQUATIONS WITHOUT RESTRAINING FORCES FOR MOMENT DISTRIBUTION SWAY PROBLEMS—Circular No. 13. Bureau of Engineering Research, University of Texas, Austin, Tex.

ROAD ROUGHNESS MEASUREMENTS OF VIRGINIA PAVEMENTS—Reprint No. 1. The Virginia Council of Highway Investigation and Research, Charlottesville, Va.

PAVEMENT PERFORMANCE—Reprint No. 4. Virginia Council of Highway Investigation and Research, Charlottsville, Va.

CONSTRUCTION AND EQUIPMENT OF THE HOME—By the Committee on the Hygiene of Housing, American Public Health Assoc. Public Administration Service, Publications Div., 1313 E. 60th St., Chicago, Ill. $2.50.

CREATING BETTER CITIES—A report on the Third Businessmen's Conference on Urban Problems, Washington, D. C., Nov. 20-21, 1950. Chamber of Commerce of the U.S., Washington 6, D. C.

A FACTUAL DISCUSSION OF MOTOR-TRUCK OPERATION, REGULATION AND TAXATION—Bureau of Public Roads, Washington 25, D. C.

PROGRESS IN ROADSIDE PROTECTION—Bulletin No. 30. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

THE SOURCE, TRANSPORTATION, AND DEPOSITION OF BEACH SEDIMENT IN SOUTHERN CALIFORNIA — Technical Memorandum No. 22. Beach Erosion Board, Office of the Chief of Engineers, Washington, D. C.

RESEARCH IN SOIL STABILIZATION—Engineering Report No. 4. Iowa Engineering Experiment Station, Ames, Iowa.

RAPID SAMPLE PREPARATION METHOD FOR SOIL SELECTION IN EARTHWORK CONSTRUCTION—Research Report No. 20. Texas Engineering Experiment Station, Texas A. and M. College System, College Station, Tex.

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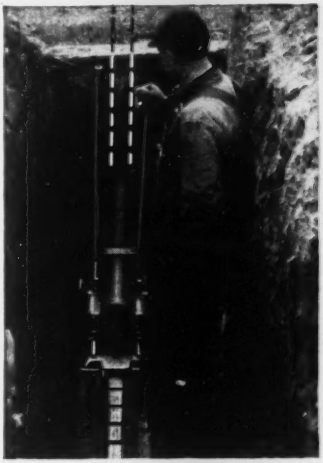

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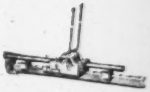

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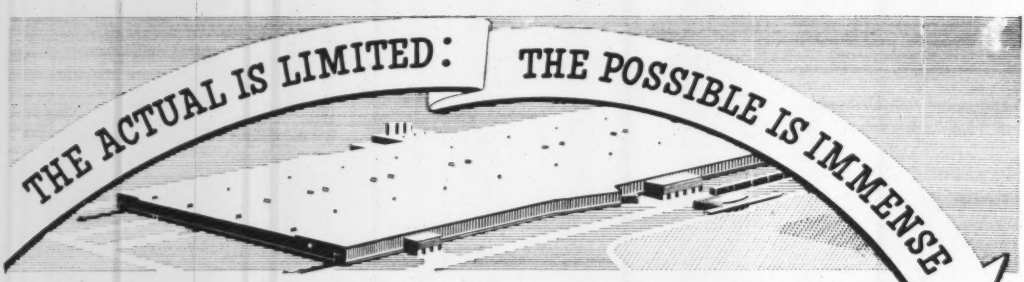

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By **J. R. Braun,** Vice President
Byrne Organization, Inc.
Engineers and Contractors
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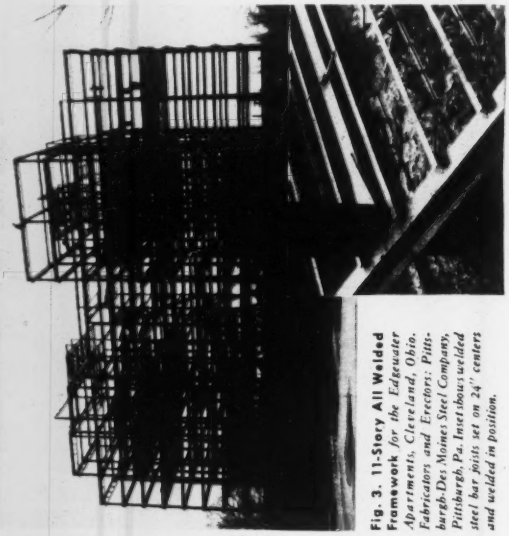

Fig. 3. 11-Story All Welded Framework *for the Edgewater Apartments, Cleveland, Ohio. Fabricators and Erectors: Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa. Inset shows welded steel bar joists set on 24" centers and welded in position.*

SIMPLER COLUMN SPLICES

Fig. 1. Typical Welded Splice *of all columns 12 to 12 and 12 to 14 WF column. Bearing plate is shop welded to lower column . . . clip angle for erection bolts is shop welded to upper column. All field welds are made in fast, easy downhand position.*

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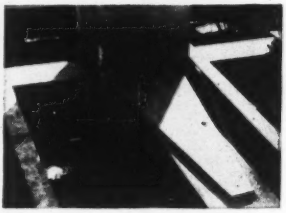

Fig. 2. Simpler Detail Speeds Erection. *Clip angle is shop welded to column for bolting beam in the field. Outside cover plates are then field welded to top and bottom flanges and the top plate to column in flat position with Lincoln "Fleetweld 5" electrodes. Bottom plate is shop welded.*

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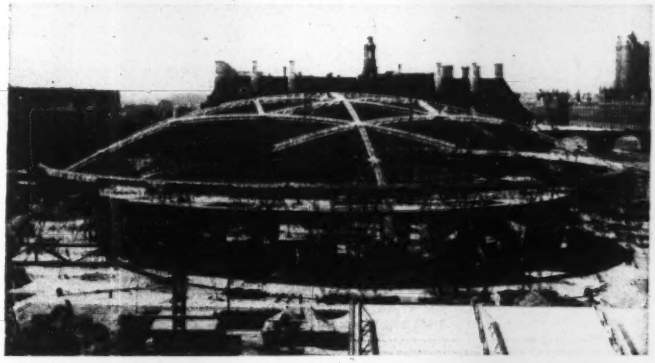
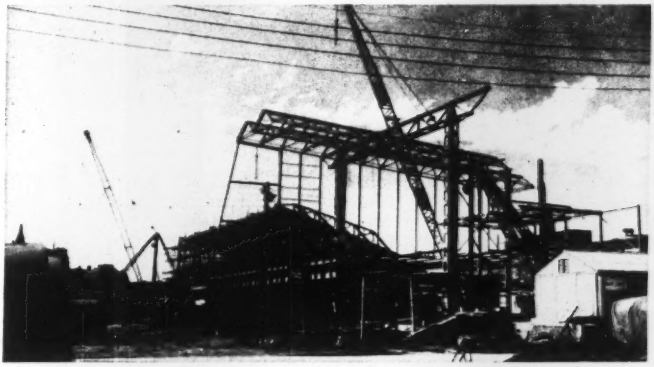


ALUMINUM DOME of ribs and sheet is carried by welded steel ring girder 365 ft in diam supported by latticed pipe struts.



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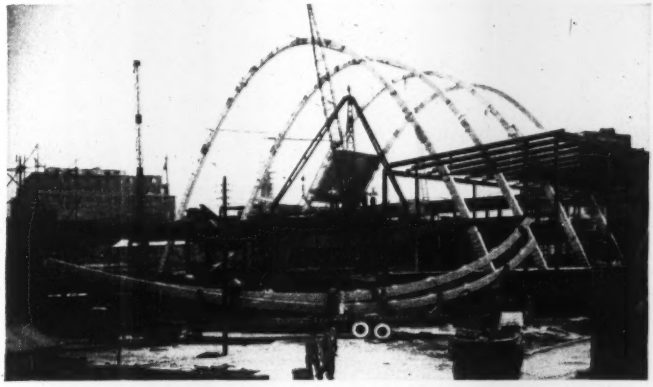

LAMINATED TIMBER ARCHES span 120 ft and rise 60 ft. They will support a hung steel panel ceiling and will be roofed with plywood.

Story on next page . . . . . .

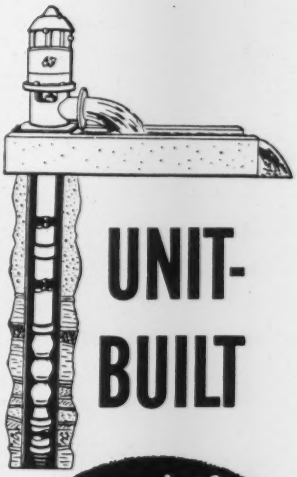

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Exhibit buildings of Britain's Festival

(*Continued from preceding page*)

On May 3 Britain's King George stood on the steps of St. Paul's Cathedral and, through a world-wide radio hook-up, issued an invitation.

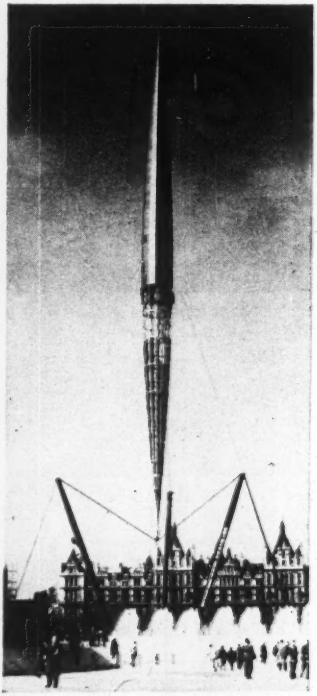
The royal welcome was extended in behalf of "The Festival of Britain, 1951" which, for the next five months, will concentrate on presenting "the living record of a nation at work and play" through exhibits, pageantry, concerts and conferences. The main events will be staged in London, but the whole nation will get into the act through special festival activities in the principal cities and towns and many of the small villages. The aim is to impress visitors and Britishers alike with "the continuing vitality of the British people."

And vitality had indeed been needed to get London's central exhibit area ready for the scheduled opening. As recently as March the 27-acre site on the south bank of the Thames across from the Houses of Parliament had been a sea of mud strewn with building materials and covered with half completed structures, as shown on the preceding page.

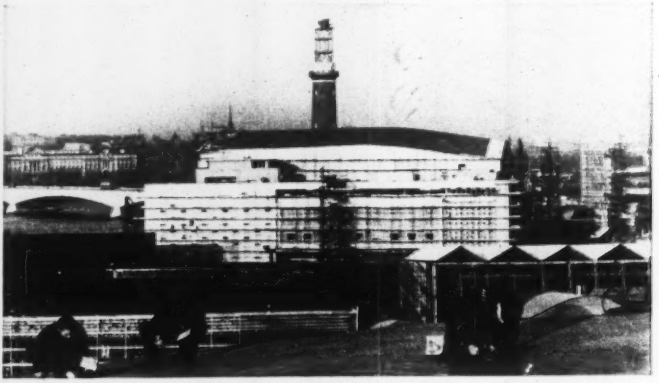
But the promise of a May 4-opening date was kept. The King, as he spoke, could see in the distance the interesting alteration to the generally uninteresting London skyline caused by the new structures of the South Bank Exhibition. Four miles behind him in the badly bombed Stepney-Poplar section of London's East End was a second Festival feature, a 30-acre modern residential neighborhood of apartments, schools, churches, shopping center and parks—a demonstration of the program planned for all of London's slum areas. Known as the Exhibition of Architecture, it is a full scale example of British town planning and building techniques.

Other interesting structural and architectural forms could be found in

(*Continued on page 53*)



TRADEMARK of the South Bank Exhibition is a 250 ft needle cradled in cables and dubbed the Skylon.



MUSIC HALL will remain to serve London after Festival is over. Workmen are calking the aluminum roof of the Dome of Discovery. Left background is new Waterloo Bridge and, beyond the Music Hall, the historic Shot Tower at whose summit a radar screen is being erected.

ESCO ORANGE PEEL BUCKET OF ALL-CAST MANGANESE STEEL

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Here's a bucket built especially for rock handling jobs where only the toughest equipment is rugged enough. It's the *ESCO* all-cast manganese steel orange peel. No other make is similarly built; no other can match its day-after-day performance.

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All parts of the *ESCO* orange peel bucket are cast of this wear- and shock-resisting steel that gets harder and tougher with use. Parts need not be cast excessively heavy to allow for wear; so the *ESCO* orange peel is lighter and less expensive than other makes designed for handling rock. Strains are distributed evenly throughout, with ample reinforcing where shock is greatest.

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Through closing mechanism and lever arrangements, power is applied through three live jaws, creating a bulldog grip on any object, no matter how rough or irregular.

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For imbedded rock the closing rope is reeved for a 5- or 6-part line, reducing closing speed and increasing closing power. For loose gravel, 2- or 3-part block lines are used, producing faster closing speed and less closing power.

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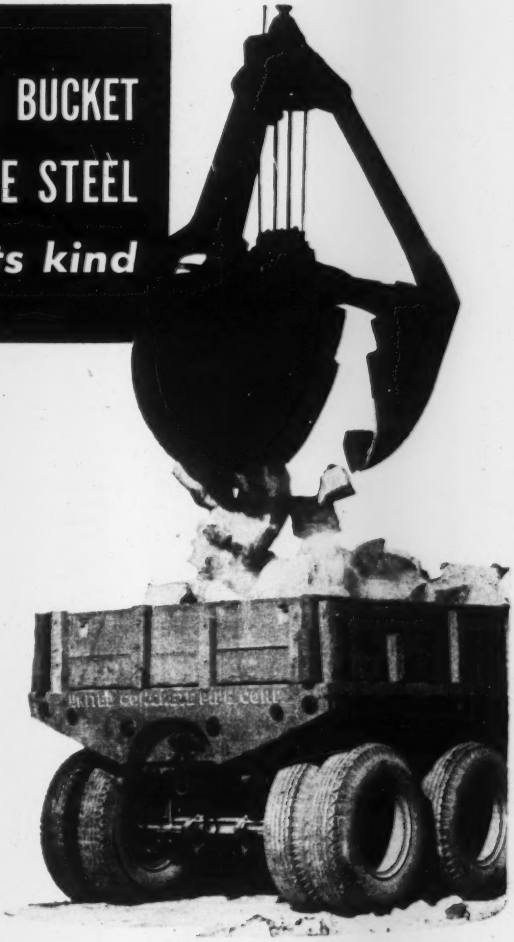
ESCO orange peel buckets are made in five sizes: 5/8, 3/4, 1 1/2, 2, and 3 1/2 yards. For full particulars, consult the *ESCO* representative nearest you, or ask for catalog. Electric Steel Foundry, 2167 N.W. 25th Ave., Portland 10, Oregon; 716 Porter Street, Danville, Illinois. Offices in Eugene, Oregon; Chicago; Honolulu; Houston; Los Angeles; New York City; San Francisco; Seattle and Spokane. In Canada, *ESCO* Limited, Vancouver, B.C.



Loading rock with ESCO 2-yard Orange Peel bucket. (Weight 9675 lbs.)

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Foreign . . .

(*Continued from page 50*)

a third Festival feature, three miles up the Thames in Battersea Park. Known as the Pleasure Gardens, this will be the area where the lighter entertainment activities will be concentrated.

It is in the South Bank Exhibition that the most striking structures are encountered, and some of these are worth brief description as examples of new techniques that might prove useful or suggestive for other than exhibit buildings.

• **Dome of Discovery**—An aluminum dome, largest in the world, will cover the exhibits of British enterprise in territorial development and of preeminence in science and exploration (see preceding page). Main roof ribs and rafters fabricated from aluminum shapes are triangular in section and 30 in. deep. Roof covering is riveted aluminum sheet. Supporting framework is of welded steel—a box ring-girder carried 45 ft above the ground by latticed diagonal struts pinned top and bottom and fabricated from sections of 3-in. pipe.

The exhibits are displayed on balconies of concrete construction entirely separate from the dome which is 93 ft high at the center.

• **Skylon**—A structural form of doubtful future practicality, but of unusual structural interest is a slender needle 250 ft high lifted 50 ft above the ground in a cradle of steel cables.

Designated the Skylon, this central feature of the exhibition is a twelve-sided lattice steel frame 14 ft wide at midheight and tapering toward either end. Sheathed in pressed aluminum reflectors illuminated by colored lights inside the framework, the Skylon will glow amber at the bottom, merging into yellow at mid-height and changing to brilliant white at the top.

The cable supports of the Skylon pass over three inclined steel pylons 70 ft high to ground anchorages of concrete. The pylons rest on a deep triangular slab to which the anchorages are joined by heavy beams. Model tests of the Skylon gave assurance of its stability in winds up to 80 mph.

• **Music Hall**—The only permanent building of the exhibition will be a modern music hall, long envisaged as a part of the South Bank improvement scheme of the London County Council. Of reinforced concrete construction, it will afford a main hall to seat 2,900 persons at concerts and a smaller one for audiences up to 750. In addition, the huge first floor foyer will be used as a dance floor. To eliminate noise from passing trains, double concrete walls are used, supplemented by acoustical treatment.

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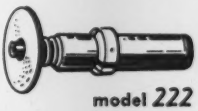

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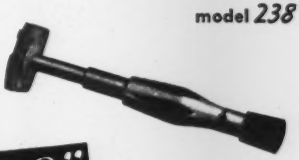
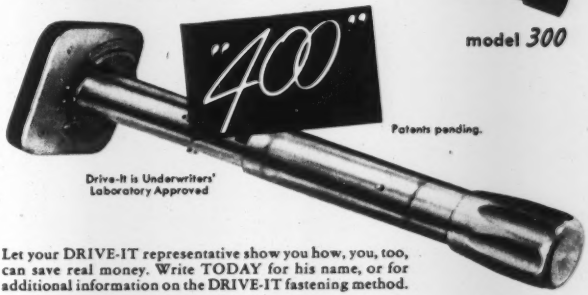


model *300*



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Typical slum clearance projects outlined by Housing & Home agency

Brief summaries of slum clearance and urban redevelopment programs planned or under way in a number of cities and towns have been issued by the division of the Housing and Home Finance Agency having to do with the work.

Following are abstracts of these reports:

Philadelphia, Pa.—A broad civic movement underlies Philadelphia's housing efforts. As a result of surveys conducted by the Planning Commission, ten areas have been certified for redevelopment because they are characterized by unsafe and unsanitary housing, undesirable land uses, lack of open space etc.

Near the center of the city lies the "Old City Area," which includes many buildings of national historic interest—Independence Hall, Carpenters Hall, Old Customs House, and churches and houses dating back to colonial days. But today much of the area has degenerated into a slum. It is now planned to clear out the undesirable structures and provide a suitable setting for the historic shrines, as well as to provide modern and conveniently located housing developments in that general area.

Indianapolis, Ind.—One of the first cities to undertake the clearing of its slums and blighted areas on a large scale, Indianapolis was one of the first to request a reservation for financial assistance under the federal program for that purpose.

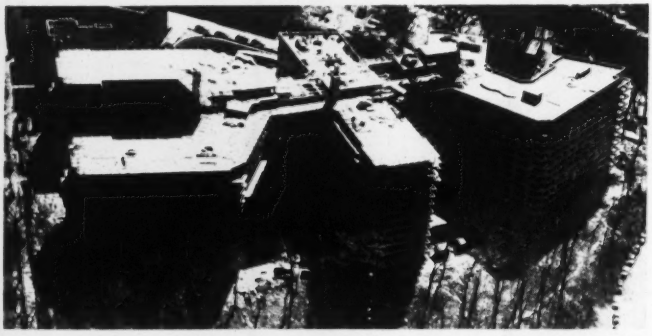
Indianapolis has been engaged in redevelopment work since 1945. It has selected two slum sites for redevelopment and has done considerable work on one of them.

As the slum clearance program proceeds on a larger scale, rehousing will be a major problem, since under the program of federal assistance in which Indianapolis intends to participate, localities are required to have a feasible plan for rehousing those families displaced by slum clearance undertakings. The city plans to rehouse low-income families in some of the 1500 low-rent public housing units for which it has received authorization.

St. Louis, Mo.—St. Louis has grown in typical American city fashion, developing many of the typical ills caused by rapid, unplanned growth—slums, blight, bad housing and traffic congestion. Slum and blighted areas include about half of the city's residential area. About 82,000 homes—more than a third of the city's total—are substandard. These slums produce only six percent of the city's real property taxes, but consume about 45 percent of the cost for public service.

Four projects outlined by the Plan Commission are noteworthy. The first, the "Civic Center Site," consists

(*Continued on page 56*)



BIG HOUSE—Rock Creek Plaza Apartments, Washington, D. C., will house about 1,300 families. Ramps connect a two-story underground garage with 16th St. (at left in picture), where main entrance is located, and Piney Branch Parkway. There is a 90-ft difference in elevation between the two streets. Building will be 8 stories high on 16th St. and will have 5 additional tiers of apartments on the lower level. Flat-plate concrete floors (similar to those used for Quebec Houses—ENR May 4, 1950, p. 34) speeded erection. Wallace Hallady is architect; Jacob Feld consultant on structural design and foundations; Jonathan Woodner Co. is builder and owner. (Raymond L. Keys photo)

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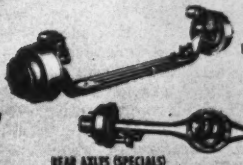

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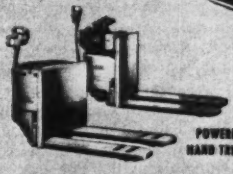

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Municipal . . . .

of an area between two plazas close to the downtown business section. It is deteriorated real estate. Present planning calls for the removal of practically all of the buildings and replacing them with middle and upper-income apartment buildings in a park-like setting.

The second is one of the worst slums in the city, where about 2,000 families live in a 100-acre area amid fifth, squalor and in run-down houses. Clearance and rebuilding with low-cost private housing to be built by the International Basic Economy Housing Corp. is planned for this district.

The third, the DeSota Carr undertaking, is to be an integrated development, combining three public housing projects and one private housing one in the same neighborhood. Streets will be realigned, and new streets, playgrounds and other facilities will be created.

The fourth project is the largest remaining tract of undeveloped land suitable for residential construction. It is owned by the city and consists of 32¼ acres. Recently the city concluded a transaction with a private corporation which has leased the ground and will build there 500 units of modern houses in a series of two and three-story buildings on winding drives with plenty of open space and adequate playgrounds.

Norfolk, Va.—Here there has been laid out a comprehensive slum clearance and redevelopment program to be carried out in successive stages ultimately calling for the clearance of wide spread central slums, involving up to 14,000 dwellings and the rehousing of about 20,000 families. Vacant land within the city will be developed for residential use, leading streets will be overhauled, traffic facilities for the central district will be expanded and a new area developed.

The first step in this comprehensive plan involves clearance of about 3,200 dwellings and relocation of about 3,600 families. This will help provide new streets for making the downtown business district more accessible and to relieve traffic congestion. This first step will take about five years.

Savannah, Ga.—In Savannah more than half the dwellings are substandard and the city proposes to do something about it. The city council has obtained a reservation of $943,110 in federal funds for capital grant purposes while it studies its situation. To make use of this reservation, of course Savannah will have to develop specific slum clearance and urban redevelopment projects that will result in redevelopment of the land for its best potential use in conformity with an overall master plan for the city, providing maximum opportunity for private development.

Denver, Colo.—The worst slum and blighted areas in Denver lie in a crescent to the west and north of the downtown business area. Consisting of about 175 city blocks, they contain 4,000 dwellings of which more than 70 percent are substandard by the local housing code definition.

A typical slum block pays the city $1,300 in taxes, while a block in a better neighborhood, with five less homes, pays 40 percent more. Yet the slum and blighted area receive 40 percent of all general relief funds—seven times its share on a population basis.

In general, the redevelopment plan for Denver calls for slum clearance and urban redevelopment with federal aid, the cleared land to be made available to private enterprise at fair value. The slums and blighted areas now under consideration would be redeveloped for commercial, industrial or residential purposes; rehabilitation of certain housing which can be saved through repair or remodeling and condemnation of buildings which cannot be rehabilitated; low-rent public housing for low-income families displaced by public redevelopment projects, including the new highway program, school construction, condemnation of substandard dwellings, and clearance.

Nashville, Tenn.—Three large public construction projects which were in preliminary stages of development as separate and unrelated items prior to the Housing Act of 1949 have been coodinated in the plans to rescue the capitol of Tennessee from slums that now face it on three sides.

Three major construction projects now in the planning stage are: greatly enlarged capitol grounds, with the construction of another office building ($6,000,000) and a library and archives building ($2,000,000); a new highway bridge across the Cumberland River; and a new public auditorium. Cooperative studies by the city and state brought about a revised major thoroughfare plan. Sites for seven low-rent housing projects and a farmers' market were selected and changes in the zoning ordinance were recommended. The Capitol Hill redevelopment area comprises 93.57 acres. It is to be cleared and made into a tree-lined arterial boulevard circling the hill, beautified by new state buildings, parks, gardens, and new commercial structures.

New Brunswick, N. J.—With as-

(Continued on page 57)

sistance from local, state and federal governments in an integrated program, New Brunswick is tackling its three chief problems—lack of recreation space, lack of parking space downtown, and a large slum and blighted area between the Raritan River and the main business section. The city plans to clear the area and make it available for redevelopment. The state is building a broad highway through the city and assisting in the beautification of the waterfront with $2,000,000 for a parkway.

The local housing authority has received approval from the Public Housing Authority on its plans for building 200 low-rent dwellings, and the city plans to use a number of these for rehousing low-income families displaced by clearance operations.

St. Paul, Minn.—The slum clearance and urban redevelopment program now emerging in St. Paul is, like that of Nashville, Tenn., an undertaking primarily to improve the area around a state capitol. It combines beautification of the capitol grounds, construction of new streets and malls approaching the capitol, erecting new public buildings, and the rebuilding of an adjacent deteriorated residential area.

In 1947 Minnesota passed legislation enabling a sound redevelopment plan to be created for the whole slum area surrounding the capitol. Later the capitol redevelopment program came into being. It now embraces the capitol approach area and surrounding territory for a total of 154 acres.

The improvements will proceed in stages, and many of the low-income families who will be displaced by the capitol redevelopment plan will be provided with decent new homes in the 2,000 low-rent public housing dwellings authorized by the Public Housing Administration, many of the units being in outlying areas, so that families can be moved from the capitol redevelopment area in time for clearance and redevelopment operations to begin soon.

Montreal boulevard—The city council of Montreal, Can., has approved the construction of the Montreal Metropolitan Boulevard, having voted an unspecified amount in a $25,000,000 loan by-law for that purpose. The two ends of the boulevard—west and east—have been built by the Quebec provincial government. It is now necessary to build the main stretch of 13 miles, through St. Laurent, Mount Royal, Montreal, St. Michael, Montreal North and Pointe aux Trembles. The cost is estimated at $6,000,000. Preparation of plans and specifications has already begun.

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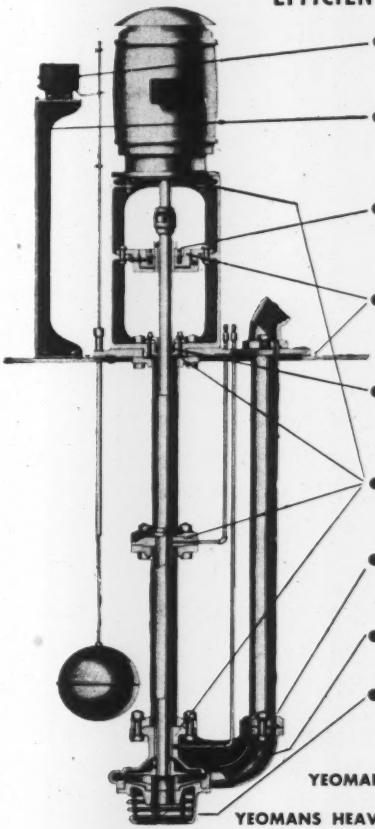

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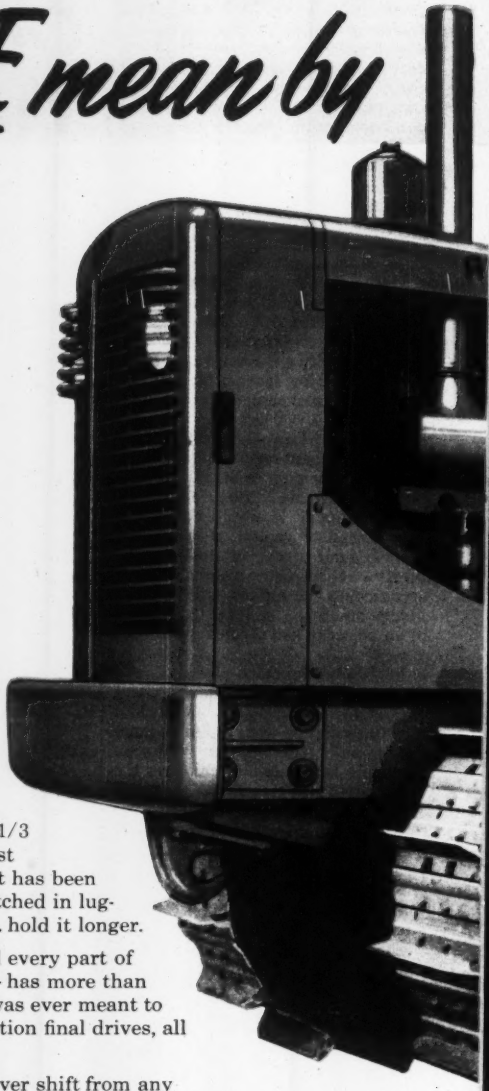

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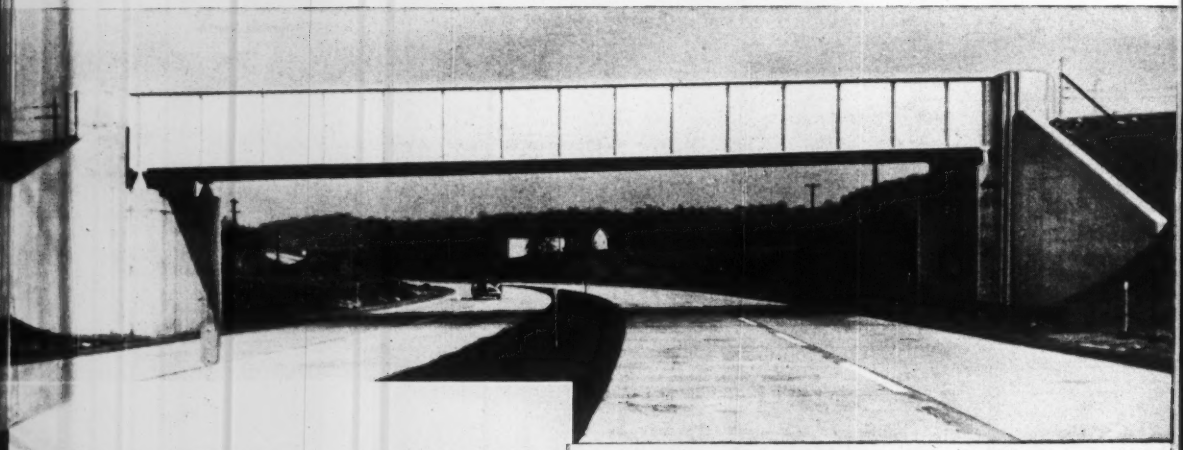
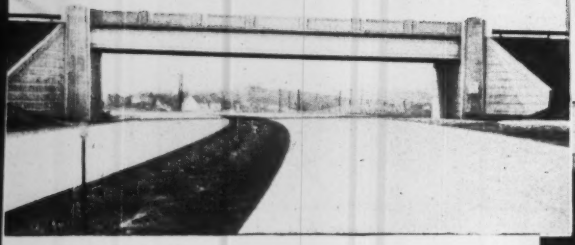
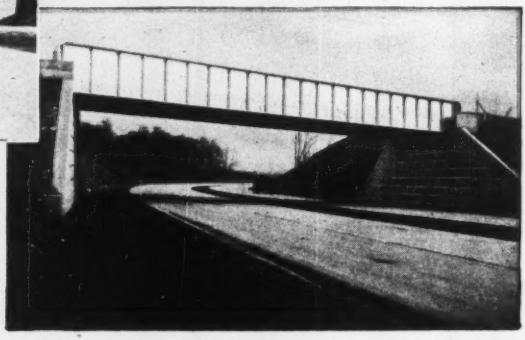


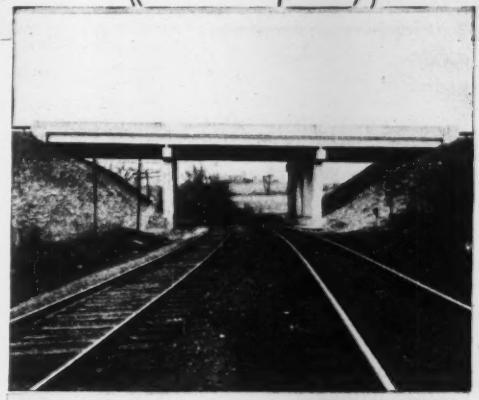


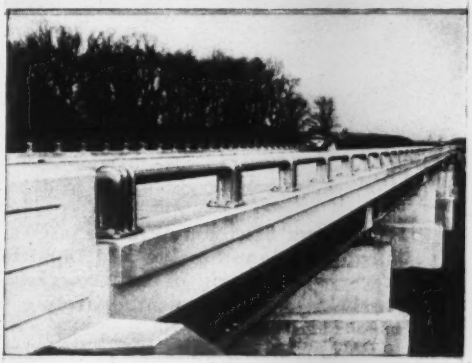


WITH the completion of the Turnpike's Eastern Extension, Pennsylvania's great highway system now includes a four-lane express highway linking its two major cities—Pittsburgh and Philadelphia.

What used to be a tedious 300-mile trip on narrow roads through mountains, large cities and small towns is now an enjoyable scenic drive, which at the 70 mile-per-hour speed limit saves more than two hours travel time. This new dream highway travels 260 miles over rivers, highways and railroads without a single crossing intersection—thanks to a series of Steel Bridges.

Fort Pitt Bridge fabricated and erected many of the 121 steel structures on the Turnpike's Eastern Extension and is proud of the important role they are playing in Pennsylvania's constant highway improvement program.





AMERICAN INSTITUTE OF STEEL CONSTRUCTION INC. AISC FOUNDED 1921

Fort Pitt BRIDGE WORKS

Member American Institute of Steel Construction

General Offices, Pittsburgh, Pa. . . . Plant at Canonsburg, Pa.

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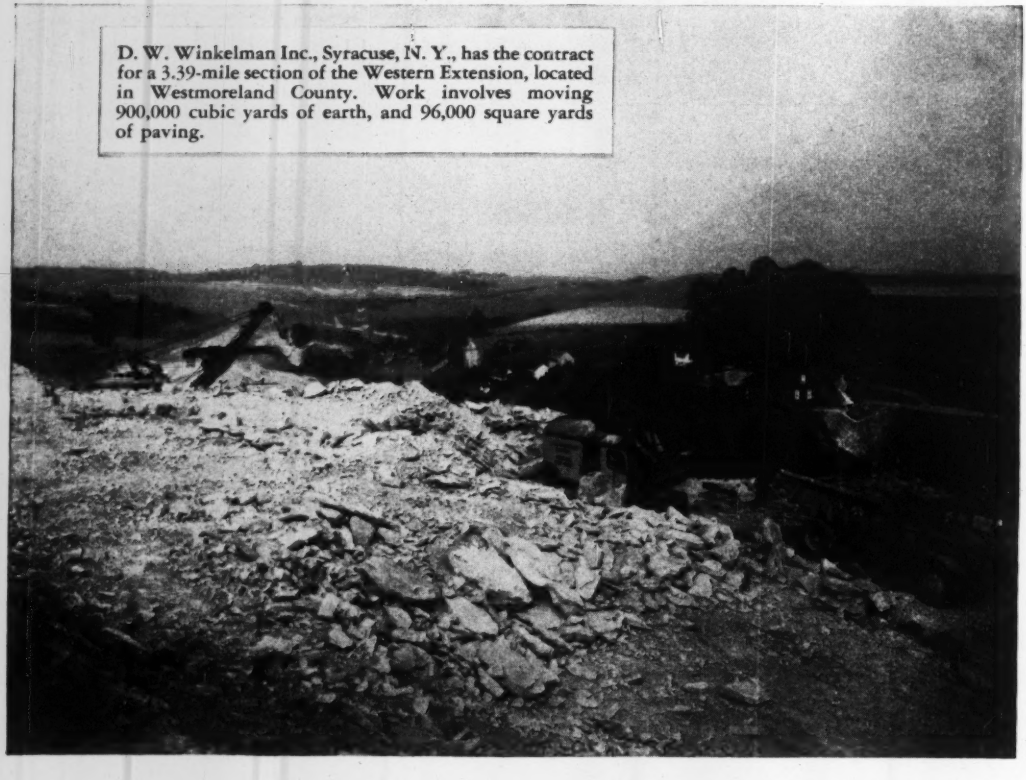
GULF PRODUCTS *and* FINE SERVICE

keep equipment rolling on Western Extension of the Pennsylvania Turnpike



D. W. Winkelman Inc., Syracuse, N. Y., has the contract for a 3.39-mile section of the Western Extension, located in Westmoreland County. Work involves moving 900,000 cubic yards of earth, and 96,000 square yards of paving.

THE Western Extension of the Pennsylvania Turnpike is another big and important project where the majority of contractors rely on Gulf to help keep equipment delivering top performance.

Leading contractors, like D. W. Winkelman, Inc. for example, know from experience that Gulf quality lubricants provide an extra margin of protection against mechanical delays. And that Gulf fuels insure full engine power and efficiency.

Then, too, they appreciate the engineering counsel Gulf provides to assure the most suitable lubricants and fuels for every unit and operating condition. And Gulf's prompt delivery service is also important to them.

Let us discuss with you how Gulf products and services can help you on your next job. They are available to you through more than 1200 conveniently located warehouses. Gulf Oil Corporation · Gulf Refining Company, Gulf Building, Pittsburgh, Pennsylvania.

FIFTY YEARS OF SERVICE
1901 GULF 1951
PETROLEUM AND ITS PRODUCTS

MEN AND JOBS

New appointments

Highway departments

Henry M. Jarrett Jr., traffic engineer Tennessee highways.

Douglas Clarke, Fenton, Mich., exec. dir. Paris, France office, International Road Federation.

G. C. Lichty, senior engineer, Missouri highways, Jefferson City.

Roy E. Jorgensen, former deputy commissioner and chief engineer of the Connecticut Highway Department, has been named engineering counsel for the National Highway Users Conference, Washington, D. C., in which position he will head the engineering activities of the conference. Mr. Jorgensen joined the Connecticut department in 1942 following 12 years with the Bureau of Public Roads. No one has been named to succeed him as deputy commissioner, but **Warren M. Creamer**, principal technical highway engineer, is acting as chief engineer.

State, city and county

R. E. Edlefsen, highway engineer, mayor of Boise, Idaho.

Chas C. Wilson, supt., public works dept., Clinton, Mich.

Boyd Wierman, city engineer, Mansfield, Ohio.

L. W. Grayson gen'l, mgr, and chief engineer, Public Service Dept., Glendale, Calif.

E. K. Varley, city engineer, Warren, Ohio.

Ray Blessing, commissioner of streets and sewers, Kansas City, Mo.

Nathan L. Smith, Dir. of Dept. of Public Improvements, Maryland.

Industrial and commercial

Faye Evans, vice-pres. of John W. Harris Associates, in charge of European operations.

W. F. Tuttle, chief engineer Armo Steel Corp., Middletown, Ohio.

R. W. Birdsall, chief engineer, **J. F. Volney**, progress engineer; and **E. L. Flasche**, structural engineer and chief draftsman, F. D. Cummer & Son Co. Cleveland, Ohio.

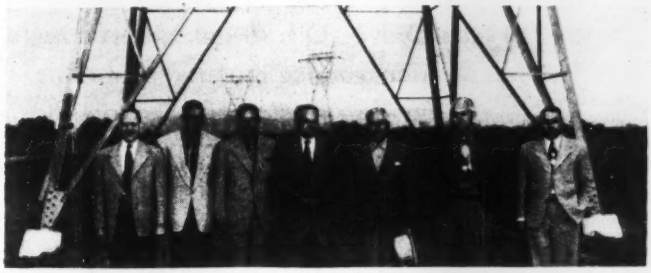
George R. Griffing, president, Mathews Construction Co., Princeton, N. J.

L. A. Green, gen'l mgr. of the Industrial Equipment Corp., Pittsburgh, Pa., is celebrating his 50th year in the equipment business.

Business changes

Wm. W. Wilson, Spokane, Wash., has become a partner in the architectural engineering firm of McClure, Adkinson & Wilson.

Raphael G. Zazmann, consulting ground water engineer, has opened his office at 419 W. 7th St., Stuttgart, Ark.



THE JOB'S DONE!—This was the pronouncement of Bureau of Reclamation, Arizona Power Authority, and contractors' officials when they gathered recently under a completed stretch of the Bureau of Reclamation's 230-kilovolt Davis Dam-Prescott-Mesa Coolidge transmission line. On hand for the informal acceptance ceremony were, left to right, Sewell K. Wingfield, chief engineer, Arizona Power Authority; Jack Jones and Claude Jones, J. & J. Construction Co., Oklahoma City, Okla., stringing contractor for the Davis Dam-Coolidge line; John C. Ryan, project manager, United Concrete Pipe, Stolte, Ralph A. Bell and Arizona Sand and Rock Co., Oakland, Calif. contractor for erection of steel towers for the Davis Dam-Hoover Dam and Davis Dam-Mesa lines; Mark Cockrill, president of the Mark Cockrill Contracting Co., Inc., Phoenix, Ariz., contractor for erection of the steel towers on the Mesa-Coolidge line. William W. Gage, field engineer, and Walter E. Sims, resident engineer of the Bureau of Reclamation's Parker Dam power project, Phoenix. In the background the steel towers lift the transmission cable across the Arizona desert to bring hydroelectric energy from the Bureau of Reclamation's power plants on the Colorado River to the state's cities, farms, mines and factories. Most of the power will be marketed by the Arizona Power Authority, a state agency.

Carl E. Green has established Carl E. Green & Associates, consulting engineers—hydraulic and sanitary—at 510 Henry Bldg., Portland 4, Ore.

James MacGregor, president of York Engineering & Construction Co., announces that its engineering organization will be located on the 5th floor at 951 Penn Ave., Pittsburgh 22, Pa.

Marc V. Sullivan, St. Paul, Minn., has recently been added to the staff at Hitchcock & Estabrook, Inc., consulting engineer and architects, 300 Lincoln Bldg., Minneapolis, Minn.

Donald Hull McCreery is now director of engineering, Holmes & Farver, Inc., 824 So. Figueroa St., Los Angeles 14, Calif.; which firm for the last two years has acted as the engineering, construction and management contractor for the Atomic Energy Commission at the proving ground at Eniwetok Atoll in the Central Pacific.

Dallas, Tex., offices of **James Stewart & Co., Inc.**, has been moved to Employers Insurance Bldg., 473 So. Skard St.

Honors

Sigovald Johannesson of Princeton, N. J., an alumnus of the Technical University of Denmark, has received from that university the honorary degree of Doctor of Engineering for his accomplishments in public works and for his literary engineering achievements.

Sidney T. Benson, village engineer of Falconer, N. Y., for the last 21 years, has been awarded an honorary life membership in the New York State Society of Professional Engineers, Chautauqua and Cattaraugus County Chapter.

Charles M. Muchnic, a director of United Engineering and Foundry Co., has been awarded the French Legion of Honor, with rank of Chevalier, for his exceptional help in the economic reconstruction of France.

L. N. McClellan, chief engineer of the U. S. Bureau of Reclamation, has been given a gold medal award for "distinguished engineering service" by the Colorado Engineering Council. He entered the Bureau of Reclamation's Denver office in 1918 and became chief engineer in June, 1948. He serves as contracting officer for the Bureau in 17 western states and Alaska.

C. D. Hartman of the West Palm Beach, Fla., water company, has been given an award for outstanding services in the engineering field.

(Continued on page 67)

ARE BIG BILLS SWALLOWING YOUR PROFITS?

Use Delvac Oils to help keep engines clean, reduce maintenance costs, increase equipment availability.

A dirty engine is a *liability*—cuts deeply into your profits because it requires excessive maintenance, keeps expensive equipment unnecessarily idle. To avoid such troubles, use the oils that help *keep engines clean*—Delvac Oils!

Delvac Oils are ideal for both heavy-duty gasoline and Diesel engines. They have unusually high resistance to oxidation, and are exceptionally detergent and dispersive. They hold formation of harmful deposits to a minimum . . . protect rings, pistons, cylinders and bearings against corrosion and wear . . . assure more available power—*rock-bottom upkeep costs!*

Get more work—*more profits*—from your engines with Delvac Oils—recommended or approved by 125 leading engine and equipment builders!

Here's Practical Help for Contractors . . .

Socony-Vacuum gives you . . .

- Help on maintenance problems.
- Individual, tested lubrication schedules.
- Advice on correct application of lubricants, proper handling and storing.
- One source of supply—available everywhere.
- Simplified inventory—with . . .

1. **DELVAC OILS**—for all gasoline and automotive-Diesel engines.
2. **MOBILUBE GX**—multi-purpose gear lubricant for all enclosed gears—manually operated transmissions, rear axles and final drives.
3. **MOBILGREASE**—in grades and types for proper lubrication of all chassis parts and engine accessories.

SOCONY-VACUUM

DELVAC OILS

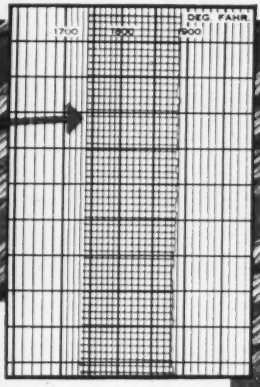
Correct Lubrication for Contractors

THE FLYING RED HORSE COMPANIES: SOCONY-VACUUM OIL COMPANY, INC. MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORPORATION

ALL ROPES *look* ALIKE... but

IN *Wickwire Rope*

GRAIN SIZE OF STEEL IS ALWAYS UNIFORM



What has grain size of steel to do with longer rope life?

Plenty!

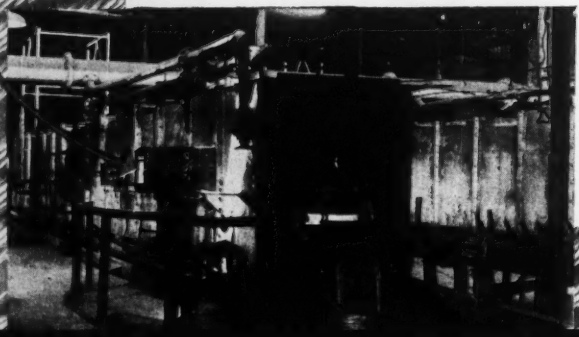
That's because in every commercial grade of wire rope, there's a certain critical grain size that gives highest resistance to bending fatigue. In Wickwire Rope we make sure that you get this definite grain size and that it is always uniform to exacting McQuaid-Ehn* standards.

Only a fully integrated company like Wickwire can give you this big advantage... because such control of grain size is possible only where all phases of manufacture are under constant check and test... starting with the melting and refining of the steel and continuing through heat-treating processes and cold drawing of the wire.

Here again—Wickwire goes "beyond specifications" to give you assurance of wire rope that can't be beat for reliability, safety and longer life.

***For detailed information on the McQuaid-Ehn test, write to our Sales Office, at Palmer, Mass.**

LOOK FOR THE YELLOW TRIANGLE ON THE REEL



Automatic heat control in our patenting or heat treating furnace operates within such close limits that the temperature in the furnace never varies more than a small fraction of one per cent.

WICKWIRE ROPE

CF&I & SUBSIDIARIES

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. **EXECUTIVE OFFICE**—500 Fifth Avenue, New York 18, N. Y.

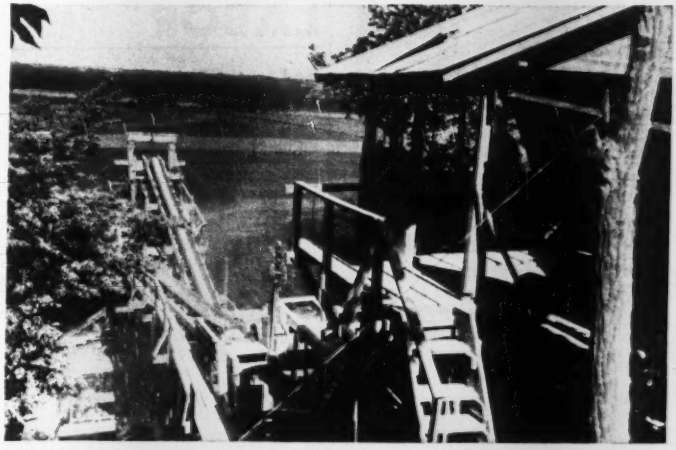
SALES OFFICES—Abilene (Tex.) • Boston • Buffalo • Casper • Chattanooga • Chicago • Denver • Detroit • Emlenton (Pa.) • Houston • New York
Odessa (Tex.) • Philadelphia • Phoenix • Salt Lake City • Tulsa

PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California

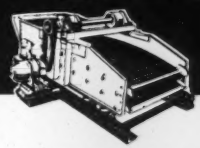
Jack Vandiver, engineer for Daniel Construction Co., is supervising construction of the Utica and Mohawk Cotton mill at Mohawk, S. C., near Seneca, for which steel is now being erected. This plant, which will be air-conditioned, will contain 600,000 sq ft of floor area.

Robert F. Olds, chief of the Corps of Engineers' operating branch, North Pacific division, has retired after more than 25 years with the Army Engineers and other federal agencies. Mr. Olds, at left, receives gifts from employees of Corps of Engineers at Portland, Ore. Presentations were made by Brig. Gen. O. E. Walsh, as Mrs. Olds looked on.

ELECTRIC POWER—will be more plentiful in New Jersey when Burns and Roe, Inc., New York contractors, finish a $13,000,000 power plant addition for Jersey Central Power and Light Co. at South Amboy. At the job are, left to right: George Holmquist, project engineer and William Weston, general superintendent for Burns and Roe, and Hal Hunt, engineer for Western Foundation Corp., of New York, pile subcontractor.



They do it with a
DEISTER...
for trouble free operation
the year around.

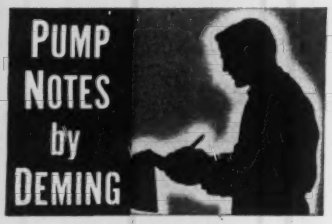


A 4' x 12' three-deck Deister Vibrating Screen used by Hayes Quarries, St. Joseph, Mo., handles an average of 90 to 100 tons of crushed rock an hour—grades and sizes 1½" and ¾" concrete rock, ½" asphalt rock and ¼" chips accurately and efficiently.

This quarry operates six days a week on a year-round basis, with the work-day for the Deister Screen ranging from eight to 10 hours. Quarry Manager F. J. Shields says: "I've had experience with all makes of vibrating screens, and the Deister is a good screen. We've had trouble-free operation from our Deister Screen."

Performance and maintenance records established by Deister Vibrating Screens in all types of quarries and gravel plants are proof of their dependable versatility. They run longer with less trouble because of their rugged, all-welded construction . . . grade faster . . . size more accurately. There's a Deister Vibrating Screen for your job. Write for our engineering recommendations and complete information.

DEISTER
SCREENS
DEISTER · MACHINE CO.
FORT WAYNE 4, INDIANA

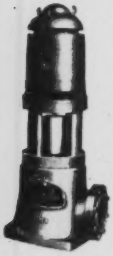


TURBINE PUMPS

These efficient, multi-stage, vertical turbine pumps are designed for wells from 4" to 16" or larger in diameter, and of practically any depth. Capacities from 15 to over 3000 G.P.M.

The standard Unit Drive Head is designed for installations where electric power is available. Eight sizes of pump heads with motors from 1 to 250 H.P.

The Flexible Coupling Drive Head is designed for use with vertical steam turbine or vertical solid shaft motor.



The Combination Motor-Belt Drive Head is designed to provide an economical means for operating the pump with belt drive from tractor or engine in case of electric power stoppage.

The Combination Motor-Right Angle Drive is designed for direct connection through flexible shaft to auxiliary source of power. Motor may be removed and pump operated through drive only.

* * *

A 24-page, illustrated Bulletin (No. 4700) contains detailed information about Deming Pumps. Write for a copy.

THE DEMING COMPANY
536 BROADWAY • SALEM, OHIO

SPECIFY DEMING PUMPS

LABOR

Wage board stresses stabilization

With organized labor back in the picture—after a two-month walkout in disagreement over scope—the newly-constituted Wage Stabilization Board was back in business last week.

Labor's return to the defense agencies was a foregone conclusion after President Truman and administration leaders accepted a "compromise" plan outlined by labor men themselves (ENR April 26, p. 24). In brief, this compromise calls for an 18-member board (the board on which labor quit had nine members), representing labor, industry and the public. It's powers have been enlarged to include settlement of labor disputes certified to it by the President. (This last point was a major point of dissention between labor and industry—industry hoping to confine WSB to wages only).

• **Big job ahead**—But the big job ahead will be stabilization—wage agreements—anyhow, not disputes, board members indicated as they got down to work.

There are already more than 1,100 cases piled up, affecting more than 3,000,000 workers, in which approval is being asked of voluntary wage increases above the 10% (over Jan. 15, 1950) ceiling prescribed early in the year.

Labor insiders confided last week that President Truman has promised them existing contracts will not be upset. So, unless Congress intervenes in the course of overhauling the Defense Production Act, wage controls are expected to allow increases under existing union contracts, whether or not they break through the ceiling.

• **Construction up first**—One of the first acts of the WSB was to appoint a three-man committee, headed by Public Member John T. Dunlop, to study 73 pending wage applications from the construction industry. The committee will suggest to WSB ways for disposing of the applications with least delay.

Most urgent is the application of Maxon Construction Co. for approval of increases of 10 to 12½ cents an hour which were due May 1 to more than 1,000 AFL construction employees at Oak Ridge, Tenn. The increase was promised last fall.

Other construction industry applications concern rates a contractor may pay when he goes into an area where rates are not established.

WSB will also consider creating a permanent construction panel—both the AFL Building Trades Department and the Associated General Contractors have requested it.

• **Members**—The President named George W. Taylor, University of Pennsylvania labor expert (who headed the War Labor Board late in World War II), as chairman of the new WSB, with Clark Kerr—director of the Institute of Industrial Relations at the University of California—as vice-chairman. Washington sources said that Kerr would take over as chairman soon, since Dr. Taylor has indicated he wants to hold the post only long enough to get WSB well started.

Other members of the new WSB include:

For labor—Harry Bates, AFL bricklayers; E. E. Walker, AFL machinists; Emil Rieve, CIO textile workers; Joseph C. Bierne, CIO communications workers; W. C. Birthright, AFL barbers. Industry—M. M. Olander, Owens-Illinois Glass Co.; A. R. Heron, Crown-Zellerbach Corp.

Public members include Dr. John Dunlop, who is also head of the construction industry-labor arbitration machinery concerned with jurisdictional disputes.

Building wages rise in first quarter

Following the trend in most other industry, union wage scales for construction workers rose only slightly in the first quarter of 1951, the Bureau of Labor Statistics reported last week.

The rise for the first three months of the year was measured at .8%—as against 1.8% in the last quarter of 1950. (BLS bases its figures on a quarterly survey of seven major building trades in 85 U. S. cities.)

Average wage estimated for all trades by BLS was $2.38 an hour as of April 2. This figure was two cents above the level of January 2, 1951, and 17 cents above January 3, 1950.

Beneficiaries of largest increases were painters, whose pay rose an average of 5.6 cents an hour, with rates overall now running between $1.50 and $2.65 an hour. Rates for other major trades include: Plumbers, between $2.00 and $3.10; electricians, between $1.90 and $3.25 an hour; bricklayers, between $2.38 and $3.50; carpenters, $1.65 to $3.25; plasterers, $2.25 to $3.50. Laborers' rates now range between $.88 and $2.34.

Laborers were getting highest pay in Newark, N. J. ($2.35), Cincinnati ($2.10) and Spokane ($2.00). Bricklayers are getting top pay of $3.25 an hour in Albuquerque, New York City, Oakland, Philadelphia, San Francisco and Tulsa. Other trades follow this top-pay pattern, in general.

Brown & Root—union battle continues

Another round in the battle between Brown & Root, Inc.—Houston, Texas, engineers and builders—and construction labor unions is due to be fought out June 20 in the Court of Civil Appeals at Austin.

The construction firm won the last round of the two-year long battle last month (ENR April 26, p. 26), when a Texas District Court granted the firm a temporary injunction against the unions, prohibiting the labor organizations from "picketing and otherwise harassing" Brown & Root.

Union attorneys are now carrying their fight to a higher court in an effort to have the injunction set aside.

Probably the strongest attack against organized labor ever made in Texas, the suit asking the injunction (and $98,450 damages) was filed by Brown & Root October 2, 1950. It charged that the unions were violating Texas labor and anti-trust laws by attempting to force the company—which has never had a union within its labor ranks—to accept a closed-shop policy.

Plumbers win election for formal certification

In the first election since the National Labor Relations Board decided to conduct bargaining polls in the construction industry (ENR April 5, p. 24), Local 48 of the AFL Plumbers Union won an election among plumbers, apprentices and gas fitters employed by 22 members of the Plumbing Contractors Association, Baltimore.

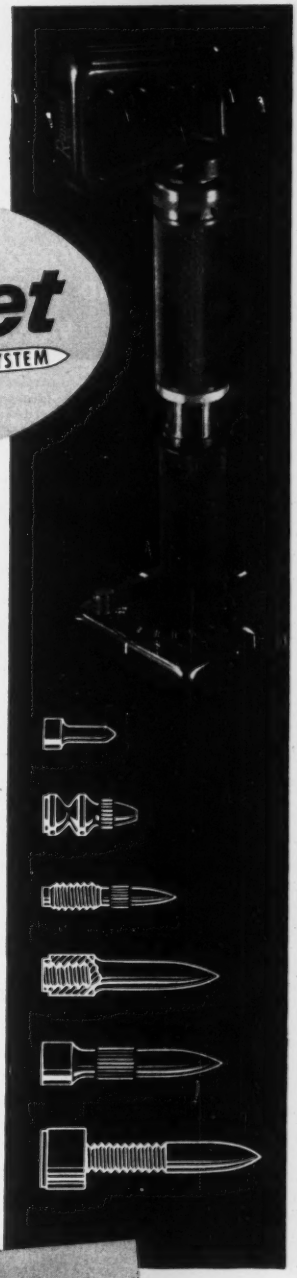
Local 48 has been bargaining with the association for more than 20 years, but is now seeking formal certification from NLRB because of the added protection obtainable under the Taft-Hartley Labor Law.

Participation in the balloting on April 27 and 28 was unusually high; 429 of 449 eligible employees voted. The result: 398 for Local 48; 9 against. Twenty-two ballots were challenged and not counted.

Arizona raises pay—Central Arizona plastering contractors have reset journeyman scales at $3 an hour.

Ramset FASTENING SYSTEM

...helps break bottlenecks



For fastening into steel, concrete, masonry and other suitable material, both time and money can be saved with the fast, versatile RAMSET SYSTEM.

Taking less than a minute per fastener from start to finish, RAMSET gets the work done in short minutes instead of long hours, and with amazing reductions in cost.

Fasteners in 76 sizes and styles, like those illustrated, are available for practically any kind of fastening job, from basement to roof. Holding power equal to or better than conventional types of fasteners. Capable RAMSET Specialists will help you select the best fasteners for your specific needs.

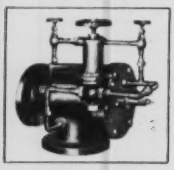
To get your projects finished sooner, at less fastening cost, investigate RAMSET SYSTEM. Special Architectural Folder with complete information will be sent on request.

Ramset Fasteners, Inc.
12117 Berea Road
Cleveland 11, Ohio
Member of Producers' Council

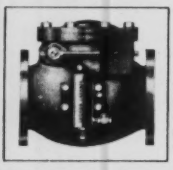
FASTEN FASTER WITH Ramset System
Pioneer in powder-actuated fastening

For minimum maintenance and greater all-around dependability USE GOLDEN-ANDERSON *Cushioned* STEAM AND WATER AUTOMATIC VALVES

G-A Triple-Acting Non-Return Valve for safety needed on high pressure boilers. Bulletin S-1A sent on request.



G-A Surge Relief Valve protects water lines against excessive pressures caused by surges in the system. Bulletin W-2 describes this valve in detail.



G-A Swing Check Valve for air, water or liquids allows full pipe line flow with minimum pressure drop. Provided with adjustable air cushioning. Bulletin W-1 will interest you.

G-A Altitude Control Valve maintains uniform water level control in tanks, reservoirs, etc. Bulletin W-4 sent on request.

All Golden-Anderson Valves are designed with the patented special double cushioning feature to prevent hammer or shock. *May we cooperate with you on your pressure control problem?*

GOLDEN ANDERSON *Valve Specialty Company*

2094 KEENAN BLDG. · PITTSBURGH 22, PA.

EDUCATION, RESEARCH

Mobile materials testing laboratory for the Army

Illustrated herewith is a mobile materials laboratory which is being tested at the Engineer Research and Development Laboratories, Fort Belvoir, Va.

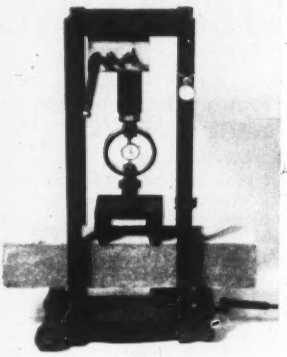
This laboratory will be used for the evaluation of existing airfields as well as for the testing and evaluation of materials going into new road and airfield construction. It is intended as a replacement for the soil, asphalt and concrete testing sets of World War II.

The laboratory is designed to carry the minimum equipment necessary to run tests on soil, asphalt and concrete. Equipment will include a "combination" testing machine capable of running California Bearing Ratio tests on soil, Marshall stability tests for asphalt design and flexural strength tests on concrete. Also included will be a drying oven, a compaction pedestal built into the floor of the van and supported from the ground by a separate jack, as well as a constant temperature hot water bath and sink with running water. An electric power generator, to operate the heating, cooling and testing equipment also forms part of the laboratory.

The van is furnished with heating and cooling equipment that will satisfy global requirements. It is 28 ft in length, and has an interior working space of 18 ft by 7 ft—adequate for 3 men. Leveling of the laboratory is accomplished by jacks. Towed by an Army prime mover, the van can be transported at normal convoy speeds.

Not only the Corps of Engineers, which is developing it at the Engineering Research and Development Laboratories, but also the Air Force and the Navy anticipate widespread use of this latest in laboratories on wheels.

INTERIOR VIEW of mobile materials laboratory looking forward. Drying oven is at left, the work bench at right compaction pedestal is on the floor. The generator panel is seen through the window.



COMBINATION TESTING MACHINE, showing concrete beam in place ready to be broken.

There are plenty of jobs for young engineers

Engineer job opportunities continue to be abundant as personnel shortages increase. Here are a few highlights from various sections and institutions:

Dartmouth College—About 65 companies have been interviewing students here since February and 200 other firms have written regarding June applications. Starting salaries for Thayer School graduates with a master's degree average about $3,900.

Bonneville Power Administration—Howard Strawn and E. J. Harrington are touring 22 colleges in the Southwest and Midwest to recruit 25 junior engineers needed this spring.

University of Colorado—Dean C. L. Eckel of the college of engineering says the shortage of engineers will continue until engineering enrollments increase to at least double the prewar figure.

A.S.C.E.—Executive Secretary W. N. Carey told members of the Montana section that the U. S. will have a shortage of 40,000 graduate engineers by 1954.

Carnegie Tech.—Faculty members say that in peace times there are jobs for 20,000 new engineers annually. The present emergency has increased requirements to 30,000.

Washington, D. C.—The country is one-sixth mobilized and already a serious shortage of engineers and scientists is apparent. Some companies with

military contracts have reported that they are not able to carry out the work because the necessary engineering and technical help is not available.

University of Washington—June engineering graduates are being offered salaries as high as $350 a month.

Engineers Joint Council—Since the "mortality" rate in engineering schools is about 50 percent, an annual freshman enrollment of 60,000 would be required to produce 30,000 engineering graduates a year. Only 30,000 entered this year.

To teach the teachers

A special program of advanced study for teachers of engineering will be offered by the College of Engineering at Cornell during the summer session, July 2-Aug. 11.

The six courses are for instructors in mechanics, structures and similar subjects. They will be taught by members of the Cornell engineering staff and will provide opportunity for individual study of particular interest to the student.

Courses and their instructors were announced as follows:

"Elementary Mechanics of Materials from an Advanced Standpoint" and "Applied Elasticity," H. D. Conway, professor of mechanics.

"Theory of Elastic Stability," George Winter, head, Department of Structural Engineering;

"Plasticity in Engineering," P. P. Bijlaard, associate professor of civil engineering;

"Advanced Structural Analysis," G. P. Fisher, assistant professor of civil engineering;

"Aircraft Structures," Carlo Riparbelli, assistant professor, Graduate School of Aeronautical Engineering.

Each course carries three hours' credit. Two may be taken during the session. Inquiries should be addressed to Professor Conway, West Sibley Hall, Cornell University, Ithaca, N. Y.

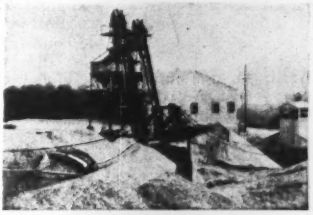
Buildings—Harvard University has a building permit for a $675,000 general science building and a $740,000 advanced science laboratory; at Windham, Conn., there are plans for a $1,346,070 regional technical school; at Northfield, Vt., Norwich University this spring will start a $500,000 science building in honor of James J. Cabot; and at Dartmouth College the Hopkins Fund will finance new physics laboratories. Mr. & Mrs. Geo. F. Jewett of Spokane, Wash., have just given $25,000 to the Hopkins fund. At a cost of $740,000 a new science hall is to be built at the Virginia Military Institute, which is located at Lexington, Va.

WITH A

SAUERMAN SCRAPER

DRAGLINE AND SCRAPER

This picture shows a Crescent scraper rigged with a crawler dragline to convert the dragline into a slackline machine that reaches several hundred feet and moves gravel from river onto bank.



SCRAPER STOCKPILING

A concrete construction project required storage of a large tonnage of aggregate on ground between railroad and mixing plant. Two Sauerman scraper machines, one of which appears in picture, stored and reclaimed 2,000 tons of material a day.

MOBILE SCRAPER UNIT

The Sauerman Tower Machine, illustrated above, uses a Crescent scraper attached to a trolley carrier which travels on a cable supported by two self-propelled towers. It can make a deep cut 1,000 ft. or more in width and move along as it digs.

In a Sauerman Power Drag Scraper you find a profitable combination of digging power, haulage speed, long reach, simple operation and economical maintenance. It cuts costs to the bone on many jobs of digging and hauling earth or bulk materials distances from 100 ft. to 1,000 ft. or more.

A Sauerman machine is particularly useful where ground conditions are difficult. It gives good results on such diverse work as the excavation of hard-packed gravel, movement of sticky clay, handling of waste material, bulk material stockpiling, removal of sludge from settling ponds and so forth. In digging from a high hill it overcomes the hazards of caving walls.

An important feature of the Sauerman machine is the Crescent scraper. Due to its streamline design, the "Crescent" requires less line-pull than any other scraper, both in digging and in conveying. It penetrates material with the ease of a plow-share, gathers a load in a few seconds, then rides its load speedily to the dumping point where it makes an instantaneous, clean dump.

The operator of a Sauerman machine has finger-tip control of the entire operation. Automatic shifting of the tail end of the machine is provided where desired. Any workman is readily trained as an operator. Power requirement is moderate. Installation and upkeep costs are surprisingly low.

When you have a troublesome problem involving the movement of any kind of earth or bulk material, send a description of your project to the Sauerman Engineering Dept. Their advice, based on over 40 years of experience, is yours for the asking. Write for new 24-page Scraper Catalog.

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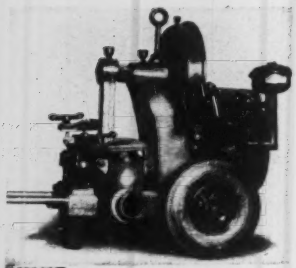

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MEETINGS

Water and power development is the keystone of a program to raise the living standards of the people of India. It was described by ASCE President Gail A. Hathaway at a recent meeting of the Metropolitan Section in New York. One of the major factors impeding extensive development of India's water resources, according to the speaker, is the necesity for using large forces of manual labor in most construction operations. Lack of money is not the only reason for this over-use of manpower, he asserted. There is also the perpetual necessity of finding employment for an enormous population continually threatened with famine.

Mr. Hathaway, who recently went to India as chairman of the United States delegation to the International Engineering Conferences at New Delhi, stated that the conferences and the Engineering Exposition held concurrently did much to inform the people of India of the technical development of the Western world.

Following Mr. Hathaway's talk, Waldo G. Bowman, editor of ENGINEERING NEWS-RECORD, commented on the socio-political factors affecting the technical progress of the country.

Prefabricated Home Manufacturers Institute has elected John C. Taylor, American Houses, Inc., New York, president; William B. F. Hall, General Industries, Inc., Fort Wayne, Ind., vice-president; and Robert E. Ott, of Harnischfeger Corp., Port Washington, Wis., secretary-treasurer.

Harold Randle was elected president of the Alberta Association of Professional Engineers, succeeding F. A. Brownie. Other officers: H. H. Moore, vice-president, and Ray Woodford, T. D. Stanley, J. J. Hanna, of Calgary; Dr. George Govier, Alex Frame, J. Graham Dale, W. J. Dick of Edmonton; and A. G. Donaldson of Lethbridge.

Newly-elected officers of the Ohio County Engineers' Assn. are Argyle J. Moon, Upper Sandusky, president; Carson O. Barklow, Portsmouth, first vice-president; and James T. Holden, Granville, second vice-president. They represent Wyandot, Scioto, and Licking counties, respectively.

J. J. Nolan, Jr., Central Foundry Co, Newark, N. J., has been re-elected president of the Cast Iron Soil Pipe Institute, which represents 27 major manufacturers of cast iron soil pipe and fittings. Deems W. Hallman, Hajoca Corp, Lansdale, Pa., was re-elected treasurer, and J. W. Struve, Rich Manufacturing Co, Los Angeles, vice-president.

Canadian Construction Association has moved its head office to the Brennan Bldg., 384 Bank St., Ottawa, Ont.

New officers of the Structural Engineers Society of New York are: Peter J. Reidy; president; Matthew Hiller, Jr., 1st vice-president; Warren W. Chapin, 2nd vice-president; Sidney Frieman, secretary; and Saul Shaw, treasurer.

New officers of the Canadian Dominion Council of Professional Engineers are: J. A. H. Henderson, Montreal, president; R. M. Richardson, St. Johns, N. B., vice-president; Leopold Nadiaw, Montreal, secretary-treasurer; and J. W. D. Farrell, Regina, Sask., executive committee.

Indiana County Highway Supervisors Assn. has elected Ernest E. Coffin, Richmond, president; Frank Shideler, Huntington, and William Slagle, Liberty, vice-presidents; and Leaton Day, Lebanon, secretary-treasurer.

At the annual meeting of the Southeastern Section of the American Society for Engineering Education, Robert L. Sumwalt, Dean of the School of Engineering, University of South Carolina, was elected chairman for the ensuing year. Dean D. V. Terrell, of the School of Engineering, University of Kentucky, was elected vice-chairman. Prof. B. M. Baver of Vanderbilt University was reelected secretary-treasurer. The Southeastern Section is made up of twenty-four engineering schools.

CALENDAR

Canadian Section, AWWA, Royal Alexandria Hotel, Winnipeg, Man., May 21-23.

Conference on Industrial and Plant Protection, N. Y. University, Washington Square Center, N. Y. City, May 22-24.

New England and New York Sewage Works Associations, spring meeting, Hotel Kimball, Springfield, Mass., June 7-8.

President's Highway Safety Conference, Washington, D. C., week of June 10.

American Society of Civil Engineers, summer convention, Brown Hotel, Louisville, Ky., June 13-15.

National Society of Professional Engineers, annual meeting, Nicolet Hotel, Minneapolis, Minn., June 13-16.

American Congress on Surveying and Mapping, annual meeting, Hotel Shoreham, Washington, D. C., June 18-20.

American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City, N. J., June 18-22.

Western Association of State Highway Officials, Fairmont Hotel, San Francisco, Calif., June 25-28.

OBITUARY

Thomas E. Boyle, 43, an engineer and superintendent of the Maryland division of the Pennsylvania Railroad, died April 26 at Philadelphia. He lived at Towson, Md., and his office was in Baltimore. He went with the railroad in 1928 after he was graduated from Notre Dame University as a civil engineer. He was track supervisor of the Philadelphia terminal division from 1938 to 1940 and division engineer from 1943 to 1945. He was appointed Maryland superintendent in June, 1948.

Lloyd M. Seamon, 76, retired construction engineer, died April 25 at Cape May Court House, N. J. He lived at Stone Harbor, N. J., and built many of that resort's development projects.

Peter P. Evans, 81, who retired in 1943 as president of the Osborn Engineering Co., Cleveland, Ohio, died April 25. The firm completed Cleveland Stadium and many other large projects while Evans was its chief executive. He was an engineering graduate of Ohio State University, and once was with the King Bridge Co.

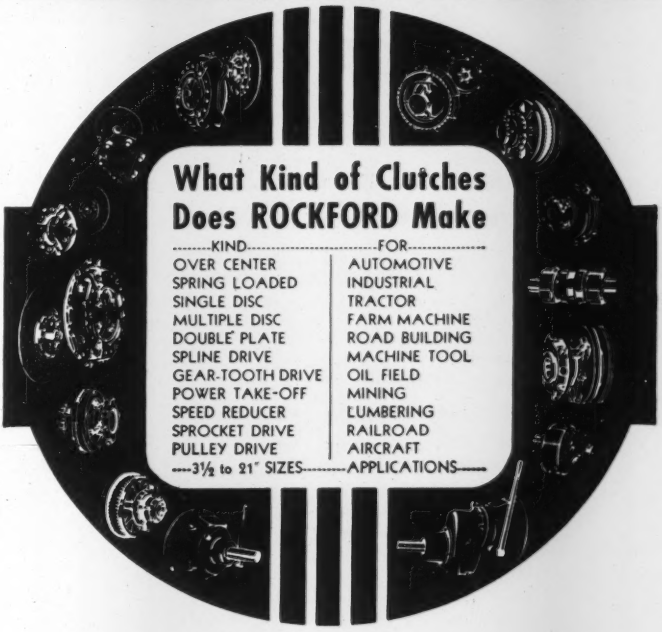
Charles J. Strandburg, 76, for 10 years director of the Department of Public Works of Jamestown, N. Y., died April 16. He was graduated from the college of civil engineering, Ohio State University, in 1908. He was first employed by the Northern Pacific Railroad in maintenance and construction. He then was retained to supervise the construction of a railway, highways, bridges and workers' living quarters on a large sugar plantation in Cuba. He remained in Cuba for a number of years as head of his own construction firm. He returned to Jamestown in 1925 as an engineer in the Department of Public Works and was named director in 1940.

Seymour Ouzer, 26, a civil engineer for Rochester, N. Y., died April 16. He was a veteran of World War II and was graduated from the Missouri School of Mines last June.

John T. Parson, 80, professor emeritus of engineering drawing at Cornell University, died in Ithaca, N. Y., April 28. He was a graduate of George Washington University and started as a draftsman with the U. S. Army Corps of Engineers. He retired from the Cornell faculty in 1938.

Matthew S. Murray, 67, civil engineer and former director of public works in

CONTROL POWER BETTER



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Kansas City, Mo., died in Tulsa, Okla., April 25.

John Manson, 91, who built the Manitoba parliament buildings, died in Winnipeg, April 22.

Fred Luber, 58, chief architectural engineer of the Electric Co., Milwaukee, Wis., died April 19. He was chairman of the Milwaukee and Wisconsin building code committees, and had just been cited by the Engineers Society of Milwaukee for distinguished services.

Horace William King, 77, professor emeritus of hydraulic engineering at the University of Michigan, died in Pasadena, Calif., April 24. He was the inventor of the K-S Hydrostatic gage for measuring the depth of liquids. He was author of "Handbook of Hydraulics," "Manning Formula Tables," and "Elementary Hydraulics" (co-author). He had also contributed sections on irrigation, hydraulics, and drainage in the "Civil Engineers Handbook." Before joining the staff of Michigan in 1912, he had served as assistant engineer on canal surveys in Nicaragua; was resident engineer for the Canton-Hankow Railway in China; U. S. assistant engineer in charge of construction at Manila Harbor; and was with the U. S. Reclamation Service.

Benjamin Rabinowitz, 59, chief engineer of the hydraulic section of the Manhattan (N. Y. City) Department of Public Works, died recently at Miami Beach, Fla. A 1917 graduate of Cooper Union, he was with the Brooklyn Bureau of Sewers 1921-33. During the first world war, he was a civil engineer at the Brooklyn Navy Yard.

Henry Brooks Van Duzer, 77, on the Oregon state highway commission 1923 to 1935, and chairman for eight years, died at Portland, April 28. Under his regime, the highway commission authorized expenditures of $106 million on Oregon highways and mileage increased from 2,000 to 4,000. During World War I, he was on the war industries board and director of the U. S. fir production board.

Maurice Owen Eldridge, 77, engineer and road expert, who was Washington, D. C.'s first traffic director, died April 28 in St. Petersburg, Fla. He retired in 1946 after 52 years as a road builder. He helped draft the first laws for federal aid to state road building in 1902. He was an engineering graduate of George Washington University.

CONSTRUCTION BUSINESS

Lenders see tighter mortgage market

A powerful factor in cutting down on housing construction is appearing—tightening in the mortgage market.

A quick survey in Washington and in lending circles reveals this picture:

Right now, it's getting difficult to place mortgages for housing. The difficulty will continue probably until near the end of the current year.

• **No collapse**—This situation does not appear to be—as some housing groups have called it—a collapse of the mortgage market. Rather, it represents a gradual tightening.

Financial observers, who place the first tightening early in April, credit it principally to two things: The March 4 agreement between the Treasury Department and the Federal Reserve Board which "unpegged" (removed part of support) from federal bonds; and the fact that the biggest lending institutions—the insurance companies—have about balanced their books as to the amount of mortgage paper they want to carry.

While government bonds were being supported, the lending institutions could readily convert their bond holdings into cash at par value, and then invest the cash in mortgages that paid 4, 4½ or 5%. Now, with the bonds subject to fluctuations, many of the lenders won't risk selling them at less than par—therefore, they have less ready cash on hand for mortgage lending.

The insurance companies in particular have been building up their mortgage accounts and scaling down their bond accounts over the past several years. With these changes nearly completed, the companies can now be expected to slow their purchases of mortgage paper.

• **How serious**—Just how serious this tightening may be to construction is a thing on which none of the experts want to comment.

At the moment, many are inclined to think that the effect won't be too much—particularly in view of the government's attempts to cut back housing construction from last year's record 1,400,000 to about 850,000 in 1951. The fewer new homes built, the fewer mortgages to place.

Overall, the feeling is that before this year is out, the situation will ease again—although it may never become as lush as it has been. The savings and loan associations can't do much to fill the vacuum left by the big lenders (they are already committed far in advance), but they will continue to take up their normal share. And as the big lenders get their books in balance and start getting repayments on their loans, they'll have more funds for normal mortgage investments.

And again, the government's "Fannie Mae"—the Federal National Mortgage Agency—can help, if a real squeeze develops. By buying secondary mortgages from original lenders, Fannie Mae can release new cash into the lenders' hands.

Defense housing program slowed by Congress

With the Defense Housing Bill hung up in Congress, the nation's defense housing program is off to a somewhat staggering start.

The new bill—now held up by lengthy hearings before the House banking committee—is designed to furnish a full kit of bait for federal housing officials to attract private builders into construction of dwellings in defense areas. The tools would include: Increased FHA insurance authorization and standby authority for special defense housing aids; permission for 90% mortgage insurance in any certified area; authority to build government housing where special incentives did not induce private builders to act; authority to assemble land and resell it to builders; authority to make loans and grants for community facilities.

• **Not now**—But for the present, the only bait in the hands of the housing people is relaxed credit terms—and whether or not they will do enough good hasn't been demonstrated.

Housing and Home Finance Agency and the Federal Reserve Board announced the relaxed terms early in March, for housing to serve two atomic energy projects—1,000 units at Paducah, Ky., and 500 units near Aiken, S. C.

Renters and buyers of this housing must be certified defense personnel. The relaxed terms roll the credit curbs of Regulation X (ENR Mar. 29, p. 78) about halfway back for one-to-four family housing, and all the way back for multi-unit housing. Example: Under Regulation X, the purchaser of a $9,000 house would have to make a down payment of $1,900—the relaxed terms bring the down payment to $1,400.

So far, six critical areas for relaxed terms have been designated: Paducah

(Continued on page 76)

Costs rise slowly under pressures

After two months of virtual inaction, costs of construction began to inch up slowly in May, as reflected in reports to Engineering News-Record.

For the month, the ENR Construction Cost Index reached 541.70, the Building Cost Index 399.87. These figures (based on 1913 = 100) represented rises of 3.01 points for the Construction Cost Index and 1.09 for the Building Cost Index (ENR April 5, p. 23).

(Note: Through typographical errors, ENR reported the Construction Cost Index at 543.90, and the Building Cost Index at 402.07 in its issue of May 10, pp 19 and 103.)

• **Pressures**—These gains for the month, although relatively small, represented uptrends in some labor costs and in a number of components including structural clay tile and lumber in some parts of the United States, as reflected in the 20 cities ENR reporters check each month in quest of price changes.

Six of the cities—Boston, Baltimore, Cleveland, Detroit, Kansas City and Denver—showed substantial changes in lumber prices, in a range of from $5 to $10 per MFBM on both pine and fir 1x6's through 2x10.

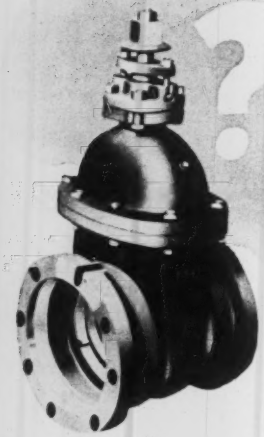
Other factors included a few spots where cement in bulk and cement in paper sacks rose from 3 to 4 cents per barrel; rises in vitrified clay sewer pipe.

Labor wage rates—many of them coupled with cost-of-living increases, pension and welfare funds—also rose at many points (see also "Labor" in this issue), and were, of course, contributing factors.

From almost all cities, too, came the same list of shortages—principally steel in any form, but including window glass (at Detroit).

• **Other indicators**—However, the Bureau of Labor Statistics, reporting its weekly average of primary market prices, said the buildings materials and mineral and metal products components of that index were unchanged for the week of May 1.

At the same time, the E. H. Boeckh & Associates report for March showed an increase of .7 of a point over February (to reach 233.9) in the 20 major pricing centers it checks.



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Purchase price (or first cost) of a valve is not its real cost. Maintenance engineers appraise the true cost of a valve as cost per year of service—i.e., purchase price plus maintenance costs divided by years in operation.

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and Idaho Falls (including the three cities of Arco, Blackfoot and Idaho Falls); San Diego, Colorado Springs and Corona, Calif.

Business briefs . . . . .

• **Loan for water**—Charleston, S. C., received a $175,000 loan from Housing and Home Finance Agency, to aid in preparation of plans for one of the largest fresh-water schemes planned in the U. S.—the 2.5 billion gallon (daily) Cooper River supply. The project, to cost $4,400,000 initially, could be expanded to supply another 7 billion gallons daily.

• **Lumber demand drop?**—Pacific Northwest sawmills were reporting a drop in demand for their product, with a resultant drop in prices. Pine 2 x 4s, for example, were quoted at $72 to $78 per MFBM, where they were at $78 to $83 a few weeks earlier.

• **Cement output up**—Production of portland cement in March—at 18,700,000 barrels—was 31% above the same period a year ago, said the U. S. Bureau of Mines. Shipments went up too—to 17,600,000 barrels, an increase of 21% over a year ago.

• **AEC operator**—The National Lead Company has been selected as contract-operator of the Atomic Energy Commission's Feed Materials Production Center, a facility planned for erection near Cincinnati, Ohio. The center is to be built on a 1,200 acre site, and will include a uranium ore refinery, and will produce uranium in forms suitable for use at other AEC plants.

• **Bid procedure**—Massachusetts general contractors and plumbing, heating and electrical subcontractors have clashed over proposed changes in bidding procedures on state contracts. Center of the fight is a proposal to abolish current requirement for one bid from the general contractor, and separate bids from subs, in favor of a lump-sum bid.

• **Canada booms**—Canadian observers are now predicting that 1951 construction work will outdistance the record $2.5 billion of 1950. Figures for the first four months of this year show nearly twice as much work in that period as in the comparable period of 1950. Total construction awards up to April were listed at $604 million, an increase of 95% over the first four months of 1950.

UNIT PRICES BID BY CONTRACTORS

Burkesville, Kentucky, sewer system

A sanitary sewer system for the City of Burkesville, Kentucky, drew 7 bids, 2 of which were below the engineer's estimated $137,975. The low bid, at $129,222, was 6% below this estimate and 2.5% below the second low bid. The bids, 33% apart, were opened by the city on Mar. 9, 1951. J. Stephen Watkins of Lexington, Ky., is consulting engineer.

The contractor must furnish all materials required for the job which includes trenching, pipe laying, replacing streets and roadways, and the construction of a pumping and ejector station complete with piping, valves, pumps, electrical connections and all excavation and grading. The concrete, Class C, shown in the unit price requires 1.2 bbl of cement per cu yd.

The work must be completed within 270 calendar days. Minimum wage scale is: common labor, $0.75; semi-skilled workers, $0.85-$0.90; and skilled workers, $1.25-$1.75.

Bidders included:

1 E. S. Eatherly & Sons Const. Co., Lebanon, Tenn. (Contr.)	$129,222.00
2 Donlon Const. Co., Nashville, Tenn.	132,561.75
7 G. & R. Coal Co., Robbins, Tenn.	192,360.75
Engineer's estimate	137,975.00

Items	Quantity	Unit prices 1	2
Vit sewer pipe house connect. 6"	lf 5,500	$2.50	$2.00
Vit. sewer pipe, 8"			
0' 0" to 6' 0"	lf 15,500	2.00	1.90
6' 0" to 8' 0"	lf 5,025	2.40	2.10
8' 0" to 10' 0"	lf 1,325	2.80	2.80
10' 0" to 12' 0"	lf 1,100	3.30	5.00
12' 0" to 14' 0"	lf 1,100	4.00	6.00
Vit sewer pipe, 10"			
0' 0" to 6' 0"	lf 320	2.70	2.40
6' 0" to 8' 0"	lf 290	3.00	2.80
8' 0" to 10' 0"	lf 430	3.60	4.80
Vitrif wyes, 8" x 6"	ea 260	10.00	6.65
6"—⅛ bends vitrified	ea 245	5.00	5.25
Standard manholes, 0' 0" to 6' 0"	ea 86	180.00	155.00
Drop manholes	ea 9	200.00	200.00
Manhl barrel extension	lf 63	15.00	20.00
Class C conc for conc cradle and/or encasement	cy 10	40.00	35.00
Portland cement conc pavm as specified	cy 10	40.00	40.00
Bit conc pavm (asphal conc)	T 50	30.00	10.00
Bit surfacing (surface treatmn)	sy 3,500	0.80	2.50
Crushed stone	T 850	3.00	2.25
Rock excav, trench	cy 1,150	8.00	10.00
River St. pump station	ls	9,500	9,800
East St. ejector station	ls	6,500	6,800
Cast iron pipe, Class 150,			
4"	lf 400	2.00	2.25
6"	lf 650	2.60	2.75

Parking area and streets, Columbia Basin Project

Two bids, both above the engineer's estimated $156,022.50, were received April 4 by the Bureau of Reclamation on the excavation, grading and paving a section of State Highway No. 10 and streets and parking areas in the town of Coulee Dam, Washington.

The low bid was 22% below the next to low bid and 20% above the engineer's estimate.

The work, part of the Columbia Basin Project, also included the removing and moving of existing buildings, and the construction of retaining wall, concrete sidewalks and curbs. Material will be furnished by the government except where noted otherwise in the unit price schedule.

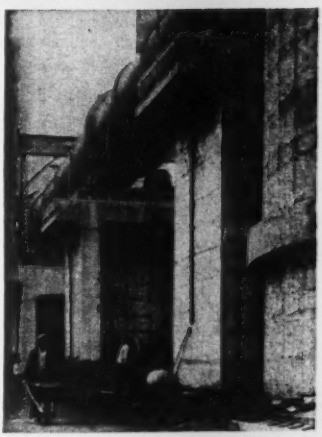
A penalty of $25 per day will be paid by the contractor for each day's delay exceeding the 180 calendar days' limit. Minimum wage scale is: common labor, $1.60; cement finishers, $2.20; power operators, $1.80-$2.70; and ironworkers, $2.10-$2.30.

Bidders were:

1 McAtee & Heathe, Spokane, Wash.	$187,496.50
2 Stagman & Roberts, Opportunity, Wash.	240,020.75
Engineer's estimate	156,022.50

Items	Quantity	Unit prices 1	2
Removing & disposing of existing frame buildings, conc foundation & clearing of work sites	ls	$2,000	$1,000
Excav for grading	cy 11,600	1.45	1.25
For state hgwy 10-A & retain wall	cy 10,100	1.45	1.25
For structure	cy 620	4.20	6.50
For trenches	cy 240	2.50	5.00
Compacted backfl	cy 2,200	4.20	6.00
Gravel backfill	cy 25	8.00	8.00
Roll embankmt & fill	hrs 40	18.00	15.00
Overhaul	cy 169,600	0.02	0.05
Watering	Mgal 250	3.00	3.50
Placing crushed rock ballast, top course, keystone for asphaltic-conc paving, typ A	cy 435	2.40	2.75
Placing crushed rock base course, top course & keystone for asphaltic-conc, typ B	cy 3,900	2.00	1.50
Place top course & keystone for service-building road	cy 75	2.50	3.00
Place sand base course for walkways	cy 75	4.00	5.00
Place asphaltic-conc paving, typ A	sy 1,750	1.00	1.10
Typ B	sy 33,500	0.60	0.70
Place 1" asphaltic-conc surfacing for walkways	sy 880	1.00	0.55
Furnish & place bit surfacing for walk top	sf 2,000	0.42	0.35
Furnish asphalt	gal 155	40.00	45.00
Furn, hand cement	bbl 1,500	5.50	6.00
Place reinf bars	lb 37,600	0.10	0.10
Conc for retaining wall	cy 200	75.00	120.00
For sidewalks	sy 2,200	3.25	8.00
Construct curb, Typ C	lf 4,220	2.50	3.00
Typ D	lf 6,250	1.70	3.00
Typ E	lf 2,350	1.70	3.00
Typ F	lf 315	3.00	3.00
Conc for structure	cy 45	125.00	140.00
Furnish & install misc metalwork	lb 4,400	0.65	0.50
8" dia conc-pipe drain with uncemented joints, construct	lf 265	1.00	0.50
Lay 8" dia conc pipe with cemented joints	lf 295	1.00	1.00
Furnish & lay:			
10" dia conc pipe with cemented joints	lf 80	2.00	2.00
12" dia reinf conc pipe with cemented joint	lf 150	3.50	3.00
Rebuild manholes & adjust manhl frames & covers	ls	365.00	400.00
Removing & salvage 24" reinf-conc culvert pipe	lf 80	5.00	3.00
Relay salvaged 24" reinf-conc culp	lf 70	4.00	5.00
Move & relocate Bldg	ls	3,900	3,500
Construct beam-typ guardrail	lf 1,690	3.15	3.00
Furnish & install:			
2" dia buried electric non-metal conduit	lf 3,770	3.25	4.00
Single conductor No. 6 direct burial cable	lf 4,170	0.80	2.40
Grounding material	lb 135	7.00	5.00
Protective wood covers	ea 69	8.00	5.00

RENT
these cost-reducing forms for concrete



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Milwaukee Adds ...*Does NOT Add*

ALTHOUGH IT BOOSTED pumping capacity 3 times, floor space requirements of this new centrifugal pump were no greater than the old reciprocating pump it replaced. Cubic space requirements, including turbine, condenser and auxiliaries, were actually many times *less*.

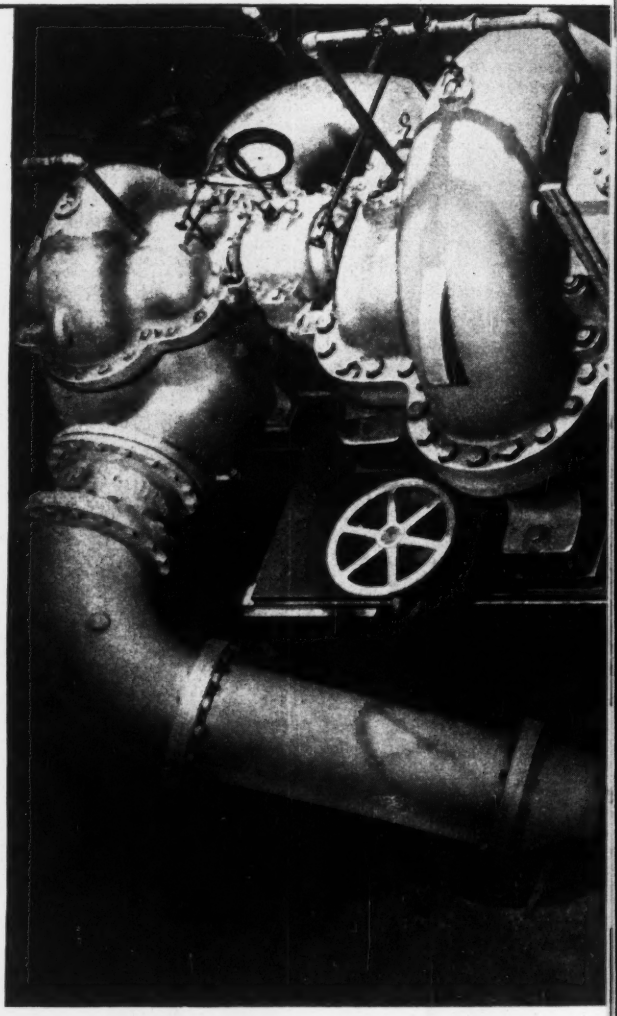
This installation — at Milwaukee's Riverside pumping station — makes an interesting comparison. It points up the progress that has been made in municipal water handling in the last 25 years.

Compactness of modern centrifugal pumps permits you to increase capacity several times in stations now equipped with reciprocating pumps, without costly additions to building space. You have the same comparative advantage in building a new, smaller pumping station.

ALLIS-CHALMERS PUMPS SELECTED

There's another fact worth noting about this installation. When Milwaukee municipal engineers made plans to increase pumping capacity, they turned to Allis-Chalmers for their pumps, turbine and condenser. Like experts of other cities, they knew they could count on Allis-Chalmers for a well engineered, thorough job. More than 90% of Milwaukee's municipal pumps are Allis-Chalmers built, some installations dating as far back as 1873.

When you plan expansion or modernization of your pumping facilities, follow the example of Milwaukee and other progressive cities. Call in your A-C representative early in your planning stages. For literature, write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for bulletin 52B6059G. A-3310

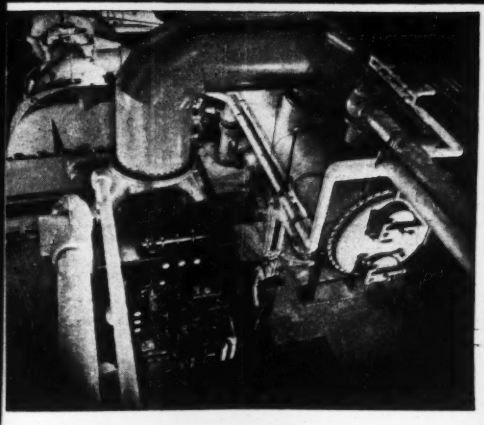


SHOWN ARE the two pumps in series rated 60 MGD, that replaced the old 20 MGD reciprocating unit. Smaller pump at far left is the condenser circulating pump.

A-C ALLIS-CHALMERS

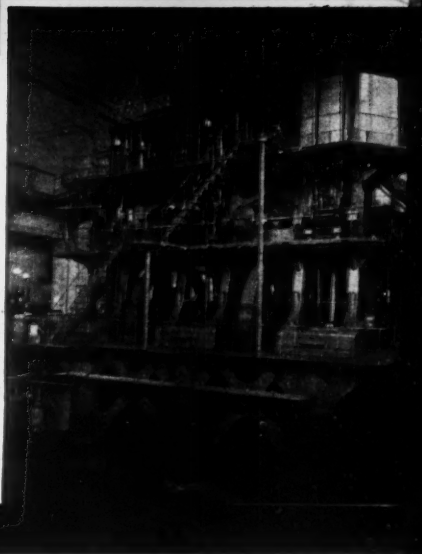
ALLIS-CHALMERS

40 MGD *Space*



DRIVING THE NEW PUMP is this Allis-Chalmers turbine (foreground) rated 3700 hp. Allis-Chalmers condenser, just to the right, completes the team. Ability to furnish the world's widest range of municipal pumps and auxiliary equipment is an important advantage you gain from Allis-Chalmers.

IN THE FOREGROUND is the 25 year old, 3 story high reciprocating pump that was replaced. A bank of these "old faithfuls," installed by Allis-Chalmers 25 years ago, is gradually being replaced by new, compact and more efficient centrifugal pumps.



CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

LOW BIDDERS—HEAVY CONSTRUCTION

Charter Oak Constr. Co., 525 Main St., Hartford, Conn., Low Bidder. $109,958. Contr. A, sanitary sewers; Di Mascio Bros., 26 Everton St., Dorchester, Mass., $214,529, Contr. C, sanitary sewers, Main St., WINSTED, CONN. P. Wks. Dpt., 27 Elm St., Winsted, Conn. Bids Apr. 26.

LOW BIDDERS—BUILDINGS

▲ **G. L. Rugo & Sons, Inc.**, 80 Boylston St., Boston, Mass. Low Bidder. $2,723,000. 274 HOUSING units, Fed. Proj. 2-13, Beech and Washington Sts., West Roxbury, BOSTON, MASS. Boston Housing Auth., 230 Congress St., Boston, Mass. Bids Apr. 27. CD 4/16.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Thomas R. Rawson**, 891 Main St., Woburn, Mass. Contract Awarded. $1,071,830. hy. and bridge, Dalton and Windsor, MASSACHUSETTS, State. P. Wks. Dpt., 100 Nashua St., Boston, Mass. CD 3/28, under LB.

MIDDLE ATLANTIC

LOW BIDDERS—HEAVY CONSTRUCTION

Curtin & Johnson, Inc., 1125 Brentwood Road N. E., Wash., D. C. Low Bidder $298,253, 4-lane c. conc. roadway on Harewood Rd., Fort Dr. and Clearmont St. N. E. from Michigan Ave. to Hiwaii Ave., near Soldiers Home Grounds, WASH., D. C. Dist. Comrs., District Bldg., Wash., D. C. Bids May 1.

James Julian, 405 du Pont Rd., Elsemere, Del. Low Bidder, $120,441, Shelpot Sewer imprvs., WILMINGTON, DEL. New Castle Co., Levy Court, Municipal Bldg., Wilmington, Del. CD 2/14/50.

LOW BIDDERS—BUILDINGS

▲ **Ritter Bros.**, 1511 N. Cameron St., Harrisburg, Pa. Low Bidder, $3,862,258, general constr.***Riggs Distler Co., Inc., 1518 Walnut St., Phila., Pa., $796,000, heating***Smith-Hoopes, Inc., 4025 N. 6 St., Harrisburg, Pa., $793,126, plumbing for 550 unit HOUSING in area bounded by Sycamore, Nace, 14 Sts. and Cloverly Terrace, HARRISBURG, PA. Harrisburg Housing Auth., City Hall, Harrisburg, Pa. Bids May 2. CD 4/17.

L. F. Driscoll, 18 W. Chelten Ave., Phila., Pa. Low Bidder, $663,000, general constr. LAUNDRY at Philadelphia (Byberry) State Hospital; PHILA., PA. General Stgte Auth., 18 and Herr Sts., Harrisburg, Pa. Bids May 2. CD 4/17.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Latrobe Road Const., Inc.**, P. O. Box 150, Latrobe, Pa. Contract Awarded, $1,271,773. 17,300 ft. highway constr. incl. 2 continuous concrete deck plate girder bridges, TR 680 982, Indiana and Westmoreland Counties, PENNSYLVANIA. State Hy. Dpt., 506 N. Office Bldg., Harrisburg, Pa. Bids Apr. 20, awarded May 2. CD 4/24, under LB.

McElwee-Courbis Constr. Co. Inc., 503 Market St., Camden, N. J. Contract Awarded. $759,991. construct sewage treatment plant, BLOOMSBURG, PA. Town Town Hall, Bloomsburg, Pa. Bids Mar. 29, awarded Apr. 30. CD 4/12, under LB.

CONTRACTS—BUILDINGS

Scarsdale Constr. Corp., Rutherford and Greenridge Ave., Scarsdale, N. Y. Contract Awarded. $684,675. County OFFICE BUILDING, N. Y. Bd. Supervs. Herkimer Co., 1100 Court St., Herkimer, N. Y. Bids Apr. 11. CD 3/28.

▲ **George A. Fuller Co.**, 597 Madison Ave., New York 22, N. Y. Contract Awarded. Approx. $14,000,000. 2 DORMITORIES, ACADEMIC bldg., dining hall, library, power plant, chapel, auditorium and gymnasium on 250 acre site PURCHASE, N. Y. Manhattanville College of The Sacred Heart, Convent Ave. and 133 St., New York N. Y. Eggers & Higgins, 100 E. 42 St., New York 17, N. Y. archts.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Ala., Mobile—B.A. 5/25—City, relocate road across waterworks dam, $100,000. J. B. Converse & Co., 106 St. Joseph St., engrs. CD 12/20/49.

La., Vidalia—B.A. 5/23—Concordia Parish Police Jury, 668,200 cu. yd. channel excav. CD 6/26/50.

BIDS ASKED—BUILDINGS

Ga., Athens—PRINTING PLANT—B.A. 5/22—University of Georgia, Athens, printing plant, Plans deposit $10 Cooper Bond & Cooper, Henry Grady Bldg., Atlanta, archts.

La., Ferriday—SCHOOL—B.A. 5/23—State Bd. Educ., Capitol Bldg., Baton Rouge, trade school on campus of Ferriday High School. Plans deposit $50, Smith & Padgett, Monroe, archts.

La., Grambling—DORMITORY—B.A. 5/23—State Bd. Educ., State Capitol, Baton Rouge, girls' dormitory at Grambling College. Plans deposit $50, Smith & Padgett, Monroe, archts.

S. C., Rock Hill—HOSPITAL—B.A. 5/23—York Co., Rock Hill hospital addns., alterations. Plans deposit $30. Walter Hook & Assoc., 303 W. 4 St., Charlotte, N. C. archts.

LOW BIDDERS—HEAVY CONSTRUCTION

Espy Paving & Constr. Co., 108 E. Bay St., Savannah, Ga. Low Bidder. $224,647, De Renne Ave., $251,719 63 St. storm sewerage sys. extens., SAVANNAH, GA. City, Savannah, Ga. Bids May 1. CD 4/11.

LOW BIDDERS—BUILDINGS

Batson-Cook Co., West Point, Ga. Low Bidder. $424,625 50 HOUSING UNITS, WEST POINT, GA. West Point Housing Auth., West Point, Ga. Bids 5/1. CD 4/6.

CONTRACTS—HEAVY CONSTRUCTION

Lang Constr. Co., 21 S. King St., Hampton, Va. Contract Awarded. $866,725, Lake Prince Pumping Station 2, NORFOLK, VA. City, City Hall, Norfolk, Va. Bids Mar. 28. CD 4/11, under LB.

† **H. H. Wright & Son**, Box 761, Fort Lauderdale, Fla., Contract Awarded $993,043, apron paving at MacDill Air Force Base, TAMPA, FLA. U. S. Eng., 575 Riverside Ave., Jacksonville, Fla. CD 2/20.

† **T. H. Pearce & Co.**, Edgewood Circle, Columbus, Ga., Contract Awarded, $886,911, 2511 tent frames and floors, FORT McCLELLAN, ALA. U. S. Eng., P. O. Box 1169, Mobile, 7, Ala. Bids May 3. CD 4/12.

▲ **R. P. Farnsworth & Co., Inc.**, 1515 S. Salcedo St., New Orleans, La. Contract Awarded. $1,164,922. Troop dormitories and other bldgs., Barksdale Air Force Base, Eng. 03.050-51-22, SHREVEPORT, LA. U. S. Eng., 300 Broadway, Little Rock, Ark. Bids May 2.

CONTRACTS—BUILDINGS

Jack Hurck & Ray Hoppe, Daytona Beach, Fla., Owner Builds. $720,000. 80 HOMES, COCOA BEACH, FLA.

Young Constr. Co., 1504 S. Dixie Hy., Coral Gables, Fla. Owner Builds. $750,000. 86 HOMES, CORAL GABLES, FLA.

J. R. Blais, Daytona Beach, Fla. Owner Builds, $400,000 RESIDENTIAL DEVELOPMENT near Ponce de Leon Inlet, DAYTONA BEACH, FLA.

Robert Angelle, Breaux Bridge, La. Contract Awarded. $399,858. CHURCH, NEW IBERIA, LA. St. Peter's Roman Catholic Church, New Iberia, La. CD 4/11, under LB.

Robert D. Short Co., 736 W. Main St., Lexington, Ky. Contract Awarded. $300,000. Y.M.C.A. BLDG., LEXINGTON, KY. Young Mens Christian Assn., 489 E. Main St., Lexington Fayette Co., Lexington, Ky. CD 4/26, under LB.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

MIDDLE WEST

SOON LETS CONTRACT—BUILDINGS

Mich., Bay City—Y.M.C.A. BLDG.—Young Mens Christian Assn., 600 Washington St., soon lets contract 3 story, brick, steel Y.M.C.A. bldg. $700,000. Paul A. Brysselbout, 1003 Washington Ave., archt. CD 4/24/47.

Mich., Detroit—SCHOOL—Austin Catholic High School, c/o Smith, Hinchman & Grylls, archts., 800 Marquette Bldg., soon lets contract 2 story, bsmnt., brick, steel Parochial High School, $500,000.

Mich., Detroit—CHURCH—Our Lady Queen of Angels Parish, Martin St., soon lets contract 2 story, bsmnt., brick, stone church and rectory, Martin St. $300,000. Herman & Simmons, 804 Transportation Bldg., archts. CD 3/2.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ **Rieth-Riley Constr. Co.**, 311 W. Monroe St., Goshen, Ind. Low Bidder, $95,589, est. $107,275 bit. resurf. 9.21 mi. U. S. Rd. 20 Mishawaka to Elkhart, Road Contr. 3351, St. Joseph and Elkhart Counties; $192,093, est. $205,158 bit. resurf. 22.03 mi. U. S. Rd. 6 Nappanee to Syracuse, and State Rd. 13 S of Syracuse, Road Contr. 3352, Elkhart, Noble and Kosciusko Counties***Meshberger Bros. Co., Linn Grove, Ind., $207,272, est. $230,702, bit. resurf. 10.98 mi. U. S. Rds. 24,224 and State Rd. 124 and c. conc. wid'n. 0.95 mi. U. S. Rd. 224, Road Contr. 350, Huntington and Mt. Etna, Wabash and Huntington Counties; $112,156, bit. resurf. 15.273 mi. U. S. 52 from north of Lebanon to Tippecanoe-Clinton Co. line, north of Lebanon, Road Contr. 3346, Tippecanoe, Clinton and Boone Counties***Middle West Road Co., Noblesville, Ind., $101,025, bit. resurf. 6.13 mi. State Rd. 67 from Spencer to junction with State Rd. 43, Spencer, Road Contr. 3347, Owen Co.; $414,432, est. $442,940, bit. resurf. and c. conc. wid'n. 15.53 mi. State Rd. 29 and 28 from Frankfort to Clinton-Tipton Co. line, Frankfort, Road Contr. 3345, Clinton and Tipton Counties.

Ralph Rogers & Co., Bloomington, Ind., $516,730 bit. resurf. 20.7 mi. and c. conc. wid'n. State Rd. 37 Bedford to Bloomington, Road Contr. 3349, Lawrence and Monroe Counties***McMahon Constr. Co., Rochester, Ind., $236,357 bit. resurf. 7.66 mi. State Rd. 43 from junction with State Rt. 14 to Pulaski-Starke Co. line, Rural Dist., Contr. 3344, Pulaski Co.***Wayne Paving, Inc., 1935 Lincoln Bk. Tower, Fort Wayne, Ind., $98,039, bit. resurf. 2.39 mi. State Rds. 35,329 and 3, Anderson and Muncie, Contr. 3348, Madison and Delaware Counties***Phend & Brown, Milford, Ind., $224,963, est. $260,743, compacted aggregate surf. 5.69 mi. State Rd. 39 north of U. S. Rd. 30 to U. S. Rd. 6, Rural Dist. Contr. 3355, La Porte Co.***Calumet Paving Co., Zionville, Ind., $517,807, est. $555,967, c. conc. 3.75 mi. State Rd. 100 from U. S. 40 to State Rd. 67, east of Indianapolis, Contr. 3353, Marion Co., INDIANA. State Hy. Comn., Indianapolis, Ind. Bids May 1. CD 4/11.

† **Willis L. Wilson**, Huntington, W. Va. Low Bidder, $130,500, pumping plant at Rosiclare Floodwall, ROSICLAIRE, ILL. U. S. Eng., 830 W. Broadway, Louisville, 3, Ky. Bids Apr. 30. CD 3/26.

LOW BIDDERS—BUILDINGS

▲ **Arnold Lies & Son**, 37 Island St., Aurora, Ill., Low Bidder, $1,800,000, SENIOR HIGH SCHOOL, AURORA, ILL. School Dist. 129, 457 Gale Ave., Aurora, Ill. Bids Apr. 16. CD 3/23.

Bauer Constr. Co., 3411 W. Hopkins St., Milwaukee, 16, Wis. Low Bidder $384,000, general contract 66 Street SCHOOL, MILWUAKEE, WIS. Bd. School Directors, 1111 N. 10 St., Zone 3, Wis. Bids Apr. 30.

CONTRACTS—BUILDINGS

N. K. Winston & Co., Inc., 22 W. 48 St., New York, N. Y. Contract Awarded, construct, manage, finance, (2nd contractor to enter into the project) 1,000 unit HOUSING for Wright-Patterson Air Field Base area, DAYTON, O. Cowen Constr. Co., Shawnee, Okla. CD 6/20/50, under CA.

▲ **Thorgersen & Ericksen Co.**, 228 N. La Salle St., Chicago, 1, Ill. Contract Awarded. $32,000,000. jet engine assembly PLANT, (2 buildings) office, boiler plant at Willow Springs, CHICAGO, ILL. Buick Motor Div., General Motors Corp., G. M. Research Bldg., Detroit, Mich. Argonaut Realty Co., c/o owner, archt.

Fred Berglund & Son, 8008 S. South Chicago Ave., Chicago, 17, Ill. Contract Awarded. $82,000. FACTORY addn., CHICAGO, ILL. Graff & Co., 730 South Chicago Ave., Chicago, 19, Ill. Fridstein Eng. Co., 228 N. LaSalle St., Chicago, Ill., engr. Awarded Apr. 23.

Phelps-Wagner Builders, 731 N. E. Capitol Ave., Battle Creek, Mich. Contract Awarded. $300,000. 2 story, brick, concrete CONVENT, BATTLE CREEK, MICH. St. Philip R. C. Parish, Battle Creek, Mich. CD 3/5.

Commercial Contg. Corp., 12160 Cloverdale St., Detroit, Mich. Contract Awarded. $325,000. 2 story, brick, steel high SCHOOL addn., FLAT ROCK, MICH. Bd. Educ., Flat Rock, Mich. Bids Apr. 9. CD 3/28.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

Mo., Dexter—B. A. 5/22—City, Thos. J. Ross, mayor, WW Imprvs., extens., appurtenances, incl. sand filter, force draft aerator, 750 gpm high service pump, 500,000 gal. rein.-con. or steel storage reservoir, 750 gpm booster pump, 3,750 ft. 12 in. c.i. pipe laying, Russell & Axon, 408 Olive St., St. Louis, Zone 2, engrs. CD 10/9/46.

† **Montana**—HIGH POTENTIAL TEST SET—B. A. 6/12—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point, or f.o.b. cars Coram, 1 portable high-potential test set, Hungry Horse Power Plant, Hungry Horse Proj. Spec. DS 3403, L. N. McClellan, ch. engr.

† **Texas**—B. A. 6/12—U. S. Eng., 606 Santa Fe Bldg., Galveston, exten. seawall, Galveston, Galveston Co., Inv. No. CIVENG 41-243-51-91. CD 6/9/44.

BIDS ASKED—BUILDINGS

Mo., St. Louis—MANUFACTURING—B.A. In June—Shampaine Co., 1920 S. Jefferson Ave., Zone 4, 2 story, 91x103 ft., 70x107 ft., brick, steel, concrete clinic equip. mfg. bldg., 1900 S. Jefferson Ave., Shapiro & Teasdale, 705 Chestnut St., Zone 1, archts.

▲† **N. M., Los Alamos**—BUILDINGS, FACILITIES—B. A. 6/25—U. S. Atomic Energy Comn., Los Alamos, Group 134 buildings, facilities, Area TA-16, Proj. E, Inv. No. 291-51-121. $3,500,000-$4,000,000. Plans deposit $50. CD 5/4.

Tex., Houston—SHOP—Bids Asked—Krieger Motors, 1901 Milam St., 2 story, 250x250 ft. masonry auto sales and service shop, concrete pier and beam fdn. $400,000. Delvin V. James, 3008 Carolina St., archt. CD 12/19.

CONTRACTS—HEAVY CONSTRUCTION

† **O. B. Ashbach & Sons**, 2975 Hamline Ave. N., St. Paul, Minn. Contract Awarded. $763,843. strategic bulk petroleum facilities, HASTINGS, MINN. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Mar. 15.

▲† **J. M. Dellinger, Inc.**, Box 4227, Corpus Christi., Tex., **Texas Bitulithic Co.**, 111 Commerce St., Dallas, Tex., and **Dean Word**, Box 330, New Braunfels, Tex., Contract Awarded. $4,190,735. runway constr. and reconstruction, North Field; $585,000. construction related services, North Field Air Force Base, Cont. NOY 24833, KINGSVILLE, TEX. Dpt. Navy, c/o Officer in Charge of Construction, Pub. Wks. Bldg. No. 19, Naval Air Station, Corpus Christi, Tex. Bids Apr. 23, awarded May 1. CD 4/27.

CONTRACTS—BUILDINGS

▲ **MacDonald Engineering Co.**, 188 W. Randolph St., Chicago, Ill. Contract Awarded. $1,000,000 design and construct PLANT and 2 story OFFICE, SUGAR CREEK, MO. Missouri Portland Cement Co., 3615 Olive St., St. Louis, Mo.

Hutter Constr. Co., 134 Western Ave., Fond du Lac, Wis., Contract Awarded. Approx. $500,000. SCHOOL and GYMNASIUM and AUDITORIUM, MANDAN, N. D. St. Joseph's Parish, Mandan, N. D. Wm. F. Kurke & Assoc., 117 13 Ave. N., Fargo, N. D., engr. and archts. CD 12/26, under South Dakota.

A. B. Brewer, 4905 Walker St., Houston, Tex. Purchase and Hire, $525,000. 28 DWELLINGS, HOUSTON, TEX. CD 4/13.

Walter Kidde Engineers Southwest, Inc., 4101 San Jacinto St., Houston, Tex. Contract Awarded. Approx. $500,000. design and construct, HEADQUARTERS bldg., HOUSTON, TEX. The Lummus Co., M. Esperson Bldg., Houston, Tex. CD 4/18.

Leslie Crockett Constr. Co., 112 Academy Dr., Austin, Tex., Contract Awarded. $877,000. est. $375,000. 50 DWELLING units in 15 buildings, Tex. 30-1, Tex. 30-2, TEMPLE, TEX. Temple Housing Auth., Temple, Tex. Bids Apr. 12, awarded May 1. CD 4/23, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Calif., San Francisco**—PASSENGER TERMINAL—B.A. 5/29—City and San Francisco Co., City Hall, 6 story passenger terminal San Francisco Airport. $6,000,000. Plans deposit $100 refundable. W. P. Day Assocs., 111 Montgomery St., San Francisco, archts. Extended date. CD 4/11.

BIDS ASKED—BUILDINGS

▲ **Calif., Atascadero**—INSTITUTE—B.A. 6/12—State Div. Architecture, P. Wks. Bldg., Sacramento, Maximum Security Institute for Dpt. Mental Hygiene on 1,200 acre site. $8,000,000. Plans deposit $200. CD 4/5.

SOON LETS CONTRACT—BUILDINGS

Wash., Seattle—BAKERY—Langendorf Bakeries Inc., 800 13 Ave., soon lets contract 250x420 ft., rein.-con. bakery $500,000. H. Bittman, Securities Bldg., archt. CD 5/1.

LOW BIDDERS—HEAVY CONSTRUCTION

† **Dodge Constr. Co., N. Maine St., Fallon, Nev.** Low Bidder, $317,488, construct 33 mi. road, Alt. test site, near LAS VEGAS, NEV., U. S. Atomic Energy Comn., P. O. Box 2088, Las Vegas, Nev. Bids Apr. 30.

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▲ **Columbia Steel Co.**, 840 Border Ave., Long Beach, Calif., Low Bidder, $1,292,395, furnishing steel sheet piling incl. water freight; **Bethlehem Steel Corp.**, Seaside Ave., Terminal Island, Calif., $387,236, no freight, LONG BEACH, CALIF. Bd. Harbor Com., 1333 El Embarcadero St., Long Beach, Calif. Bids Apr. 30. CD 12/6/44.

CONTRACTS—BUILDINGS

Garff, Byberg & Garff, P. O. Box 1204, Salt Lake City, Utah, Contract Awarded. $889,000, est. $800,000. superstructure of UNION bldg. at Utah State Agricultural College, LOGAN, UTAH. State Bldg. Bd., State Capitol, Salt Lake City, Utah. Bids Apr. 12. CD 3/21.

▲ **Fluor Corp.**, 360 E. 2nd St., Los Angeles, Calif., Contract Awarded. Approx. $10,000,000. construct 8,000 bbl. catalytic cracking PLANT, WOODS CROSS, UTAH. Phillips Petroleum Co., Bartlesville, Okla. CD 3/20.

ALASKA

LOW BIDDERS—HEAVY CONSTRUCTION

† **J. S. Ramstad Constr. Co.**, Anchorage, Alaska, Low Bidder. $688,069, est. $773,162. 2.2 mi. railroad grade and track on Seward-Portage rim, ALASKA. The Alaska Railroad, Dpt. Interior, Anchorage, Alaska. Bids Apr. 30. CD 4/11.

LOW BIDDERS—BUILDINGS

† **Denali Constr. Co.**, Anchorage, Alaska. Low Bidder, $650,961. 115x280 ft., steel general REPAIR SHOP, ANCHORAGE, ALASKA. The Alaskan Railroad, Dpt. Interior, Anchorage, Alaska. Bids Apr. 30. CD 4/6.

CANADA

SOON LETS CONTRACT—BUILDINGS

Que., **Montreal**—CHURCH, etc.—Parish of Ste. Sixte, Rev. L. Lacombe, cur, soon lets contract 62x184 ft. church, and 2 story, 34x60 ft. presbytery, all concrete, rein.-con. stone. Approx. $500,000. M. Legare, 255 B. Decarie Blvd., Ville St. Laurent, archts.

▲ Que., **Sherbrooke**—SEMINARY WINGS—Le Seminaire de St. Charles Borromee, 65 Marquette St., soon lets contract 4 and 3 story L-shaped, 55x100 ft., 65x195 ft., concrete, brick, brick, seminary wings. Approx. $1,000,000. J. Aime & Albert Poulin, 71 Prospect St., archts. CD 2/14.

CONTRACTS—HEAVY CONSTRUCTION

Evans, Coleman & Evans, Ltd., foot of Columbia St., McLennan, McFeely & Prior, Ltd., 99 E. Cordova St., Dominion Bridge Co. Ltd. 2450 Boundary St., all Vancouver, B. C. Contract Awarded. $755,895, supply 4800 tons reinforcing steel for sections Granville Street Bridge, VANCOUVER, B. C. City, City Hall, Vancouver, B. C. Awarded May 1. CD 4/30, under LB.

▲ **The R. Timms Constr. & Eng. Ltd.**, 221 Bingar St., Welland, Ont. Contract Awarded. Approx. $1,800,000, 2 N. C. O. quarters, 3 officers' quarters, O. R. quarters total 8 buildings R.C.A.F. station, CINTAN, ONT. Defence Constr. Ltd., 441 Queen's Quay W., Toronto, Ont. Bids Apr. 11. CD 4/4.

CONTRACT—BUILDINGS

Lawrence Constr. Ltd., 217 Pape Ave., Toronto, Ont., Contract Awarded. Approx. $900,000, 3 story 109-suite rein.-con. steel masonry APARTMENT with GARAGES in bsmt., TORONTO, ONT. Montgomery Apartments Ltd., 118 Montgomery Ave., Toronto, Ont., CD 5/2.

PROPOSED PROJECTS

WATER SUPPLY

Mass., **Grafton**—South Grafton Water Dist., Grafton, water sys., test wells, grav. packed wells, pump station, 250,800 gal. steel standpipe, 6-to 12-in. water mains, South Grafton $328,000. Howard E. Bailey, 6 Beacon St., Boston, consult. engr. CD 4/26.

▲ **N. Y., Buffalo**—Western New York Water Co., 11 Niagara St., imprv. water supply, incl. increasing pumping capacity, installing mains, from Lake Erie at Woodlawn. $1,100,448. CD 11/10/47.

O., **Perrysburg**—Village, water treatment plant at Maumee River $570,000; water distr. sys. imprvs., $350,000. Finkbeiner, Pettis & Strout, 518 Jefferson St., Toledo, consult. engrs. Carleton Finkbeiner, village engr.

Pa., **Phila.**—Dpt. P. Wks., City Hall Annex, standpipe and booster pumping station, Bustleton-Somerton vicinity. $150,000. Elbert J. Taylor, water bureau chief. CD 3/11/45.

Tenn., **Tullahoma**—City, WW sys. exten. and sewage treatment work and sys. exten. $800,000. Greeley & Hansen, 220 S. State St., Chicago 4, Ill., consult. engrs.

▲ **Tex., Austin**—City, c/o Walter Seaholm, mgr., Municipal Bldg., 124 W. 8 St., filter plant, incl. lake intake and high service pumping station, 25 m. g. p. d. status. $1,750,000. Freese & Nichols, 407 Dancieger Bldg., Fort Worth, consult. engrs. CD 11/15.

Tex., Golden Acres—Harris County Water Control & Imprvt. Dist. 25, c/o E. C. Overhultz, Jr., pres., Golden Acres, water sys. incl. deep wells, tanks and distr. mains, $234,000. J. Thomas Kelley, 1009 Scanlan Bldg., Houston, consult. engr.

▲ **Tex., Houston**—City, City Hall, 900 Brazos St., water treatment plant, in connection with San Jacinto River Projects. $4,000,000. Freese, Nichlos & Turner, 2111 Natl. Standard Bldg., consult. engrs. CD 12/6.

SEWERS, WASTE DISPOSAL

▲ **Ill., Waukegan**—North Shore Sanitary Dist., Waukegan, imprvs. and addns. to Zion, North Chicago, Winthrop Harbor, Highwood, Lake Bluff, $1,000,000. Greeley & Hansen, 220 S. State St., Chicago, 4, Ill., consult. engrs.

▲ **Ind., Indianapolis**—City Bd. Wks., City Hall, main sewer line for west side to serve area around 12 and 14 Sts., $1,200,000, Warren & Van Pragg, Inc., Decatur, consult. engrs. sewer mains to serve Ritter Ave. and L. 10 St., $500,000, relief storm sewers to serve E. 32 St. and Washington Blvd., $245,000. Charles W. Cole & Son, South Bend, consult. engr. CD 5/9/49.

▲ **La., New Orleans**—City, City Hall, voted $5,000,000 bonds Apr. 24, sewerage and water.

Mass., **Danvers**—Town, R. A. Gines, engr., Sylvan St., sewer mains, 8 and 12 in. transite pipe. $100,000. Elson T. Killam, 140 Cedar St., New York, N. Y., consult. engr.

▲ **Mass., Holyoke**—City, P. Wks. Dpt., City Hall, sewage treatment plant. $2,143,000, Keis & Holroyd, 257 Broadway, Troy, N. Y., consult. engrs. CD 6/23/50.

Mo., **Kansas City**—City, City Hall, Zone 6, storm relief sewer proj., Flora Ave., Linwood Blvd., 54 St., Troost and Woodland Aves. area boundaries, $200,000, Block & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. John E. Waring, City Hall, Zone 6, City engr. CD 11/10/47.

Wis., **New Richmond**—City, Mrs. Anna Halverson, clk., sewage disposal plant, interceptors, etc., $355,000. Banister Eng. Co., 1549 University Ave., St. Paul, Minn., consult. engr.

BRIDGES

▲ **La., New Orleans**—City, City Hall, voted $7,000,000 bonds Apr. 24, grade separation.

▲ **Tennessee**—State Hy. Dpt., Memorial Bldg., Nashville,

bridge over Loosahatchie River and bridge over Crooked Creek, Route 14, Austin Peay Hy. $1,000,000. S. Squires, c/o owner, ch. engr.

▲ **Tex., Baytown**—City, street imprvs. and hard paving, $1,000,000. H. S. Berlin, Baytown, consult. engr. CD 8/8/49.

STREETS AND ROADS

Calif., **San Diego**—City Council, Civic Center, sidewalks, curbs, etc. in Poplar St. and Mauzanita Dr., etc. $192,292. Alden K. Fogg, engr. CD 12/6/44.

N. J., **Camden**—Bd. Freeholders, Camden Co., Court House, 1200 prof. Nicholason Rd., $100,000, paving Haddon Ave., $400,000, paving Market St., $200,000. S. Herbert Taylor, co. engr. CD 2/3/48.

Wash., **Seattle**—City, County-City Bldg., Seattle, Zone 4, paving 26 Ave. W. and other streets, $198,181, alley in Block 17, Denny Furlman Addn., $10,224. R. W. Finke, city engr.

Wash., **Seattle**—City, County—City Bldg., Zone 4, paving, grading, sidewalks, 42 to 34 Ave. S.W., W. Juneau to W. Raymond Sts. $370,364.

EARTHWORK, WATERWAYS

† **Tennessee**—U. S. Eng., 303 U. S. Court House, Nashville 1 Tenn., furnishing, installing four 25,000 kw generators for Old Hickory hydro-electric power plant, approx. 2½ mi. from Old Hickory. Serial No. CIVENG 40-058-51-36.

Tex., **San Antonio**—City, City Hall, Military Plaza, straightening channel areas San Antonio River by cutting new river lines. $275,000. W. W. Toxey, city engr.

▲ **Tex., Zapata**—Zapata County Water Control & Imprvt. Dist. 1, c/o Santos Medina, pres., Zapata, complete irrigation sys. for 35,000 acres, incl. 500,000 lin. ft. 12-to 42-in. concrete pipe; 400,000 lin. ft. distr. ditches; 4 pump stations, etc. $3,000,000. Alamo City Engineers, Transit Tower, San Antonio, consult. engrs.

AIRPORTS

Ariz., **Phoenix**—AIRCRAFT, etc.—National Guard Assn., 400 6 St. N. W., Wash., D. C., National Guard aircraft installation at Sky Harbor Airport, 250,000 sq. ft. parking apron hangar, 2 story lean-to, warehouse, motor pool, repair shops. $1,500,000.

▲ **Ill., Glenview**—RUNWAY EXTEN., etc.—Dpt. Navy, Ninth Naval Dist. Great Lakes, Ill., runway exten., water tower $1,400,000; aviation fuel facilities both for Glenview Naval Air Station, $300,000.

† **La., Shreveport**—STORAGE FACILITIES—U. S. Eng., 300 Broadway, Little Rock, Ark., storage facilities for unconventional fuels, incl. eight 26x81 ft. rein.-con. igloos, at Barksdale Air Force Base. $450,000.

† **Mass., Weymouth**—AIRPORT IMPRVS.—First Naval Dist., 495 Summer St., Boston, airfield expansion, runways, taxiways, parking areas at Naval Air Sta-

(Continued on page 85)

DESIGN

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Designer—Herbert Bayer

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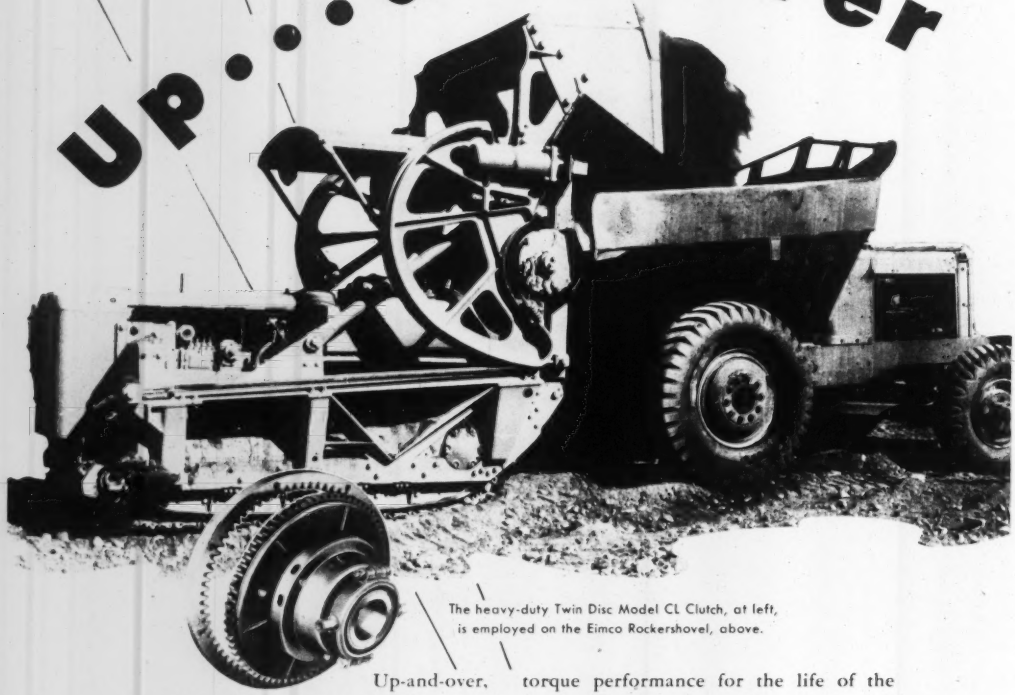

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(Continued from Page 82)

tion, South Weymouth, $5,274,000, Charles T. Main, Inc., 80 Federal St., Boston, consult. engr. Thompson & Lichtner Co., Inc., 8 Alton Place, Brookline, soil test & survey engr. CD 4/2.

† **N. M., Albuquerque**—DORMITORIES—U. S. Eng., Box 1538, Albuquerque, 7 two story 78,000 sq. ft. masonry dormitories, $750,000; 750-man mess hall and administration, $350,000, at Kirtland Air Force Base, Inv. No. Eng. 29-005-51-43.

† **Tex., Lackland Air Force Base**—SUB-STATION—U. S. Eng., 606 Santa Fe Bldg., Galveston, electric sub-station expansion, imprvs. $375,000. Beavers-Ashford Corp., Transit Bldg., San Antonio, Tex., consult. engrs. CD 3/30/50.

▲† **Tex., Lackland Air Base (Br. San Antonio)**—AIRPORT EXPANSION—U. S. Eng., 606 Santa Fe Bldg., Galveston, addnl. expansion at Lackland Field Air Force Base. $38,670,000.

▲† **Tex., Randolph Field**—AIRPORT EXPANSION— U. S. Eng., 606 Santa Fe Bldg., Galveston, addnl. expansion at Randolph Field Air Force Base. $34,526,000.

▲† **Wash., Spokane**—STORAGE, etc.—U. S. Eng., 4735 E. Marginal Way., Seattle, Zone 4, refueling and bulk storage $2,000,000. Ralph M. Parsons, Co., 6170 Live St., Los Angeles, Calif., consult. engr.; plans by Naramore, Bain, Brady & Johanson, 904 7 Ave., Seattle, enlisted men's barracks both at Fairchild Air Force Base, $1,200,000. Lt. Col. J. P. Buehler, distr. engr. CD 3/4/50.

Que., Lac Des Loups—AERODROME—F. T. Collins, secy., Dpt. Transport, Ottawa, Ont., aerodrome at above location between Senneterre and Mont Laurier. Approx. $800,000.

LATIN AMERICA

Mexico — Pemex, Petroleos Mexicanos, Mexico City, Mexico, plans oil field collection lines, Chilapa in Macuspana Twp. $500,000. CD 3/30.

Mexico, La Paz—Casto Verdaves Pineira, Domicilio Conocido, La Paz, B. C., plans tourist hotel and restaurant. $500,000.

Mexico, Mexico City—Mexican Govt., Sria. de W. y A., Leija y P. de la Reforma, Dr. Gustavo Gamboa, secy., Mexico City, plans children's polio hospital. $750,000.

▲ **Mexico, Monterrey**—C. F. de E, Juarez y Humboldt, Mexico City, plans 15,000 kvt. electric power plant. $1,750,000.

Mexico, San Nicolas—Cuprum, S. de R. L., Corregidora, 600, San Nicholas de los Garza, N. L., plans aluminum products factory. $500,000.

PUBLIC BUILDINGS

Ariz., Flagstaff—STUDENT UNION—State, Arizona State College, Flagstaff, plans by Leacher & Mahoney, Title & Trust Bldg., Phoenix, student union bldg., auditorium dining hall at Arizona State College, $725,000. CD 1/28/49.

▲ **Calif., Bakersfield** — HOUSING — Kern Co. Housing Auth., 517 Roberts Lane, Bakersfield, plans by Ernest L. McCoy, 130 Hay Bldg., 106 housing units; plans by Robert N. Eddy, 1700 19 St., 244 housing units. Approx. $3,500,000-$4,000,000. CD 2/2.

▲ **Calif., Burlingame**—SCHOOL—City, City Hall, $1,000,000 bond election May 18, Mill Estate School. CD 2/2.

▲ **Calif., Fresno**—AUDITORIUM—Fresno City Unified School Dist., 2348 Mayposa St., plans by H. Rafael Lake & Elso B. DiLuck, 408 Patterson Bldg., auditorium at Roosevelt High School. $1,200,000. CD 11/17.

▲ **Calif., Lennox**—SCHOOLS—Lennox School Dist., 10319 S. Firmona St., Lennox, plans by Kistner, Curtis & Wright, 816 W. 5 St., Los Angeles, 1 story, frame, stucco North Primary School, South Primary School, Jefferson School, Buford School. Approx. $1,000,000.

Calif., Norwalk—SCHOOL—Norwalk School Dist. 1211-E. Walnut St., plans by Kistner, Curtis & Wright, 816 W. 5 St., Los Angeles, 1 story Site F, 34,600 sq. ft. Site K, 33,500 sq. ft., school bldgs. Approx. $500,000. CD 4/26.

Calif., Paradise—SCHOOL—Paradise Unified School Dist., Paradise, $274,000 bond election May 15, high school Wagstaff and Clark Rds. $564,000.

Calif., Redwood City—SCHOOL—Sequoia High School Dist., Redwood City, bond election May 18, San Carlos-Belmont High School, $1,500,000. CD 6/18/48.

Calif., San Francisco—SCHOOL—City, City Hall, plans by Clarence W. Mayhew, 251 Post St., Lakeside School, $800,000. C. Jefferson Sly, 58 Market St., consult. engr. CD 11/17/48.

▲ **Calif., San Francisco** — HOUSING — San Francisco Housing Auth., 440 Turk St., plans by Ward & Boiles, 215 Leidesdorff St., 172-unit housing; Potrero Ave., $1,474,000; plans by Angus McSwenney, 514 Mission St., 420-unit Ridge Point Housing, near Hunters Point, $3,680,000; plans by Milton Pfleuger, 580 Market St., San Francisco, 164-unit Alemany Housing $1,402,000. CD 7/19/49.

▲ **Calif., Stockton**—CLASSROOM BLDGS.—City, City Hall, $8,800,000 bond election June 5 additional classrooms bldgs. CD 10/16/45.

▲ **Calif., Travis Air Force Base**—SCHOOL—Crystal-Union Elementary School Dist., Suisun, plans by Russell Guerne DeLappe and Mitchell van Bourg, Claremont Hotel, Berkeley, school, $1,100,000.

Ga., Warner Robins—SCHOOL—Houston Co. Bd. Educ., Perry, plans by Nick Pascullis, Macon, grammar school. $500,000.

Ill., Oak Lawn—SCHOOL—School Dist. 229, Oak Lawn, plans by Madden O'Connor, 164 E. 154 St., Harvey, high school, $660,000.

Ind., Indianapolis—SCHOOLS—Bd. School. Comrs., M. V. Bailey, bus. dir., 150 N. Meridian St., Indianapolis, Zone 4, plans by, Burns & Burns, 824 Architects and Builders Bldg., Indianapalis, Zone 4, 1 story, bsmnt., brick, rein.-con. grade school, 630 W. Michigan St., $900,000.

▲ **Ind., Richmond**—POWER PLANT—Bd. P. Wks., Lee Meadows, Mayor, Chr., City Hall, electric light and power plant, $3,200,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult engrs. CD 1/12.

Ia., Sheandoah—SCHOOLS—Bd. Educ., Sheandoah, voted $550,000 bonds, schools.

Mass., Holyoke—INFIRMARY—City, Pub. Welfare Dpt., City Hall, plans by Frederick H. Franz, Nonotuck St., infirmary at hospital, Ingleside St. $850,000. CD 4/24.

▲ **Mich., Battle Creek**—SCHOOLS—City, Bd. Educ., plans by Louis C. Kingscott & Assoc., 511 Monroe St., Kalamazoo and Lewis J. Sarvis, 201 Bailey Bldg., brick, steel Junior High School, Orchard, East Ave., and Emmett St., $750,000; brick, steel Franklin Elementary School, Main St., $450,000; 2 story, brick, concrete elementary school, Green St., $400,000. CD 3/13.

Mich., Jackson—HOSPITAL—City, C. H. Elliott, mgr., brick, steel Foote Hospital addn. $900,000.

Minn., White Bear Lake (Br. St. Paul)—SCHOOLS—Bd. Educ., F. D. Melhorn, clk., voted $500,000 bonds Apr. 17, two schools, Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, archts.

Mo., Independence—SCHOOL—Bd. Educ., L. G. Keith, supt., plans by Weatherford & DeFoe, 206 N. Liberty St., Benton School, $300,000, wing on Bryant School, $150,000. CD 3/15.

▲ **Mo., Kansas City**—HOUSING—Kansas City Housing Auth., Forrest D. Byars, chn., City Hall, Zone 6, plans by Keene & Simpson, 15 W. 10 St., Zone 6, fifty-eight bldgs., 454 housing units, Campbell to Lydia, Third and Fifth Sts., incl. recreation center, $5,041,105. W. L. Cassell, 912 Baltimore St., Zone 6, mech. engr. Hare & Hare, 114 W. 10 St., Zone 6, site planners. CD 1/23.

Neb., Sidney—HOSPILTAL—Cheyenne Co., defeated bonds Apr. 24, hospital. $660,000. CD 4/2.

O., Dayton—SCHOOL—Mad River Twp. Bd. Educ., Walter E. Stebbins, supt., Harshmanville Rd., 24-room school, Brandt Pike between Virginia Dr. and Harshman Rd. $850,000. CD 9/11.

Pa., Johnsville—SCHOOL—Warminster Twp. School Dist., Warminster, plans by David, Dunlap & Carver, 1717 Sansom St., Phila., school and administration bldg. $566,850.

S. C., Williston—HIGH SCHOOL—City, plans by F. Arthur Hazard, Marion Bldg., Augusta, Ga., negro elementary high school. $605,000.

▲ **Tenn., Memphis**—HOUSING—Memphis Housing Auth., 264 N. Lauderdale St., plans by A. L. Aydelott, 1st. Natl. Bank Bldg., 500 family brick, concrete, reinforced steel housing, $5,000,000. Pickering Eng. Co., Shrine Bldg., consult. engr.

▲† **Tex., Amarillo**—HOUSING—U. S. Atomic Energy Comn., Los Alamos, N. M., will not construct housing to house approx. 1,000 prospective employees of new Pantex Atomic Energy production plant, near here. $1,750,000. (Correction—no project planned). CD 4/6.

Tex., Borger—SCHOOL—Comn. Educ., 1001 Texas & Pacific Bldg., Fort Worth, plans by Macon O. Carder, Fisk Bldg., Amarillo, School No. 1. $711,493.

▲ **Tex., Corpus Christi**—HIGH SCHOOL—Independent School Dist. of Corpus Christi, c/o Weldon Gibson, dir. Properties & Spec. Services, Corpus Christi, plans by Smyth & Smyth, 1806 S. Alameda St., Junior High School. $1,004,232. CD 4/26.

Tex., Kingsville—SCHOOL—Kingsville Independent School Dist., c/o G. W. Wier, supt. Schools, Kingsville, plans by Abbott & Evans, 1218 S. Staples St., Corpus Christi, Memorial Junior High School and gymnasium. $513,000. CD 1/26.

▲ **Tex., Port Arthur**—SCHOOLS—Port Arthur Independent School Dist., Port Arthur, bond election May 12, school remodeling, addns. $900,000; No. 1, Elementary School, $750,000; No. 2, Elementary School, $850,000.

▲ **Tex., San Antonio**—TUBERCULOSIS HOSPITAL—Board for State Hospital & Special Schools, State Bldg., Austin, plans by Atlee B. & Robert M. Ayres, Transit Tower Bldg., 600 bed tuberculosis state hospital, for San Antonio State Hospital. $1,500,000. CD 9/22/50.

▲ **Wash., Medical Lake**—SCHOOL—School Bd., Medical Lake, school. $1,000,000.

W. Va., Moundsville—ARMORY—State Natl. Guard Bureau, Charleston, plans by Nay & Shaw, Chapline St., Wheeling, W. Va., 1 and 2 story, brick, concrete, steel armory. $500,000.

▲† **W. Va., Natrium**—PLANT—Dpt. Army, Pentagon Bldg., Wash., D. C., supertropical bleach plant, 8 mi. north of New Martinsville. $3,000,000.

▲ **Ont., Port Hope**—SCHOOL—Durham County District High School Bd., Port Hope, plans by John B. Parkin Assocs., 717 Church St., Toronto, high school, Approx. $1,000,000. CD 3/5.

Ont., Toronto—HOSPITAL ADDN.—Riverdale Isolation Hospital, Dr. B. Hanna, supt., St. Matth[illegible] P[illegible], and City of Toronto, Toronto, plans by K. S. [illegible], C[illegible] owner, 100-bed hospital addn. Approx. $500,0[illegible]

Que., Hull—SCHOOL—Hull Protestant School Bd., R. E. Brown, secy., School, $500,000.

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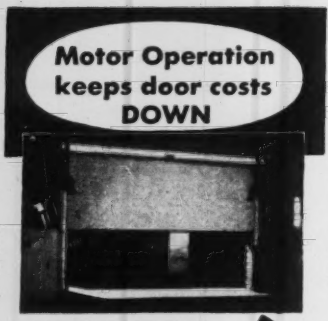

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▲ **Yukon Territory, Whitehouse**—OFFICE—Canadian Govt., Hunter Bldg., Ottawa, Ont., plans by C. B. K. Van Norman, 540 Seymour St., Vancouver, rein.-con. federal office. $1,500,000.

COMMERCIAL BUILDINGS

▲ **Ala., Birmingham**—HOSPITAL—Birmingham Baptist Assn., Education Bldg., plans by Lawrence S. Whitten, Brown-Marx Bldg., West End Baptist Hospital addn. $1,000,000. CD 1/11/47.

Calif., Los Angeles—DWELLINGS—Bonnie Brae Gardens, 463 S. Robertson Blvd., plans by Wm. O. Brack Drafting Service, 13625 Ventura Blvd., Sherman Oaks, 72 dwellings in tract 12317 in Reseda District, $500,000.

Calif., Los Gatos—RESIDENCES—Blossom Hill Manor, c/o Gifford E. Sobey and W. Newton Green, archts., 125 W. Main St., Los Gates, 30 residences, $520,000.

Calif., Van Nuys—DWELLINGS—Liberty Bldg. Co., 2209 Michigan Ave., Santa Monica, plans by Max Maltzman, 4015 W. Jefferson Blvd., Los Angeles, 95 frame, stucco dwellings, in tract 17073, $807,500.

▲ **Calif., Norwalk**—DWELLINGS—Larwood Co., 307 W. 8 St., Los Angeles, Calif., plans by W. M. Bray, 5670 Wilshire Blvd., Los Angeles, Calif., 190 frame, stucco dwellings in Tract 16698. $1,400,000.

Ga., Atlanta—SHOPPING CENTER—The Cloverleaf Mart, c/o Alexander & Rothschild, 316 Peachtree St. N. E., shopping center. Approx. $500,000.

▲ **Ill., La Grange**—Y.M.C.A. BLDG.—West Suburban Y.M.C.A. plans by Eugene B. White, 19 S. LaSalle St., Chicago, 3, Ill./15 Y.M.C.A. Bldg., Ogden Ave. and La Grange Rd., $1,250,000. CD 12/14/50.

▲ **Ind., Fort Wayne** — CHURCH — First Presbyterian Church 201 E. Washington St., Fort Wayne, Zone 4, plans by A. Hensel Fink, 1701 Arch St., Phila., Pa., church, $1,000,000. T. Richard Schooff, & W. Byron Proctor, 922 W. Berry St., Fort Wayne, assoc. archt. CD 11/15

▲ **Ind., Indianapolis**—HOMES—The Justus Company, 1013 North Gladstone St., 75 homes east side in Hawthorne Lane Dist., $1,000,000.

▲ **Ind., Indianapolis**—HOMES—Markun Constr. Co., 4366 N. Meridian St., Indianapolis, 56 double-unit modern homes, Arlington Ave. $1,000,000.

▲ **Mich., Dearborn** — RESIDENTIAL DEVELOPMENT — L. R. Ritenour, 1500 N. Telegraph Rd., Fairlane residential development on 106 acres from Ford Estate, lots 100 and 120 ft. wide, Dearborn Country Club Sect. $2,000,000.

▲ **Neb., Sidney**—HOUSING— U. S. Eng., 1709 Jackson St., Omaha, plans by M. J. Lahr, Standard Oil Bldg., Omaha, construct, finance, manage, 100 units at the Sioux Ordnance Dept. CD 3/16.

N. J., Bayonne—COMMUNITY CENTER—Jewish Community Center, 21 Lincoln Parkway, community center and school, Hudson Blvd. $453,000.

Ore., Portland—HOSPITAL—Emanuel Hospital, 2800 N. Commercial St., plans by Church, Newberry & Roehr, Builders Exchange Bldg., 4 story, bsmnt., 48x100 ft., hospital wing, building 2 story, bsmnt., 64x164 ft. $640,000.

Pa., Phila.—STORE—Louden Realties, Inc. of New York City, c/o Donnelly & Suess, 220 S. 16 St., store. $500,000.

▲ **Pa., Phila.**—RESIDENCES—Owner, c/o Agent Edward T. Flood, 5904 N. Broad St., residential development, Bustleton Sect. $3,000,000.

▲ **Tex., Houston**—OFFICE—Great Southern Life Insurance Co., 401 Louisiana St., plans by Alfred C. Finn, Bankers Mortgage Bldg., 15 story bsmnt., masonry office, Fannin St., Palm to Southmore Sts., air-conditioning, steam heating, etc. $3,500,000. Robert J. Cummins & Reginald F. Taylor, Bankers Mortgage Bldg., consult. engrs.

▲ **Alaska, Fairbanks**—APARTMENTS—R. P. Hull & A. E. Waxberg, Fairbanks, plans by R. H. Peck, 332 2 Ave., W., Seattle, Wash., 144 units Second and Lacey St., apartment. $1,694,200. CD 3/16/50.

Que., Hull—CHURCH—Roman Catholic Parish of St. Joseph, Blvd. St. Joseph, Hull, plans by L. Sarra Bournet, 189 Principal St., Hull, church, $800,000.

▲ **Que., Montreal** — HOTEL — G. W. McGregor, c/o Bankers Trust Co., 105 W. St. James St., 110x160 ft. hotel and 112x150 ft. theatre in rear, both concrete, steel, brick, $1,500,000.

INDUSTRIAL BUILDINGS

▲ **Calif., Belmont** — FACTORY — Western Gear Wks., Lynwood, Calif., factory on 13 acre site. $2,000,000.

▲ **Calif., Carlsbad**—POWER PLANT—San Diego Gas & Electric Co., 861 6 Ave., San Diego, steam power plant. $12,000,000.

▲ **Calif., Fontana** — PLANT — Koppers Co., Koppers Bldg., Pittsburgh, Pa., roofing materials and pipe enamel plant, 158 acre site. $5,000,000.

▲ **Calif., San Diego**—GENERATING STATION EXPANSION—San Diego Gas & Electric Co., 861 6 Ave., Silver Gate, generation station expansion 50,000 kw. turbo-generator. $3,000,000.

Calif., San Diego—PLANT—Solar Aircraft Co., 2200 Pacific Hy., San Diego, mfg. plant addn. $292,632.

Ill., Des Plaines—FACTORY, etc.—Littlifuse, Inc., 4757 Ravenswood St., Chicago, Zone 40, plans by Prather & Prather, 8 S. Michigan St., Chicago, factory and office, $300,000.

▲ **Ill., Harvey**—POWER HOUSE—Wyman-Gordon Co., 147 and Wood Sts., plans by Schmidt, Garden & Erikson, 104 S. Michigan St., Chicago, Zone 3, power house addns. $1,000,000.

▲ **Ind., Anderson**—PLANT—Delco Div. of General Motors Co., 2401 Columbus Ave., plant to mfg. turbo jet plane parts, addns. Approx. $2,500,000. Herman Staggenburg, co/ owner, ch. engr.

▲ **Ind., Marion**—PLANT—Dana Corp., 4100 Benett St., Toledo, O., 500,000 sq. ft., brick, steel plant, $5,000,000 with equipment.

Ind., North Madison—FACTORY—Williamson Heater Co., Madison, 40,000 sq. ft. factory addn. $400,000.

▲ **Mich., Manistee** — PLANT — Hooker Electro-Chemical Co., Niagara Falls, N. Y., chemical plant. $7,000,000.

N. M., Loco Hills—PLANT—Frontier Natural Gasoline Co., Loco Hills, natural gasoline plant unit. $703,986.

N. Y., Brooklyn—STORAGE—Cannold Realty Corp., 226 S. W. 20 St., New York, Zone 11, plans by Irving Margon, 12 E. 41 St., New York Zone 17, altering 5 story storage and light mfg. bldg., 1149-1169 DeKalb Ave. $140,000.

N. Y., Caledonia—WAREHOUSE—G. L. F. Farm Supplies, Terrace Hill, Ithaca, warehouse, Iroquois Rd. $101,000.

▲ **Okla., Chickasha**—POWER PLANT—Public Service Co. of Oklahoma, 600 S. Main St., Tulsa, steam power plant, near here. $15,000,000.

Pa., Johnstown—SHOP—Conemaugh & Black Lick R.R., H. M. Dalziel, ch. engr., Bethlehem, plans by Horace A. Bailey, 305 Bedford St., 90x350 ft. diesel repair shop alterations, rebuilding around present bldg. $300,000.

▲ **Pa., Marcus Hook**—PLANTS—Sun Oil Co., 1608 Walnut St., Phila., benzene toluene facilities. $8,380,000; aviation gasoline facilities. $2,577,145. P. D. Barton, c/o owner, ch. engr. CD 1/12/49.

Tex., Damon—PLANT—Southern Production Co., Freeport, revamp vapor-recovery plant, near here. $750,000.

▲ **West Virginia**—COMPRESSOR STATION—Atlantic Seaboard Corp., 1033 Quarrier St., Charleston, compressor station on Cobb-Rockville gas pipeline, $1,350,000.

▲ **Ont., London**—FACTORY—Minnesota Mining & Power Co., Northern Life Bldg., plans by Prack & Prack, 310 Main St. E., Hamilton, brick, steel factory. $2,000,000.

Que., Ville St. Laurent—PLANT, etc.—Air Reduction Canada Ltd., Hodge Ave., Ville St. Laurent, plant and offices. $800,000.

UNCLASSIFIED

† **Calif., San Francisco** — DRYDOCKS — Twelfth Naval Dist., Federal Office Bldg., San Francisco, Dry Docks repairs Nos. 2 and 3, Naval Shipyard. $950,000. Wilton Smith & B. L. Nishkian, 1045 Sansome St., San Francisco, consult. engrs.

Illinois—YARD TRACKS, etc.—Chicago & Illinois Midland Ry. Co., E. M. Loebs, ch. engr., Illinois Bldg., Springfield, constr. 5.2 mi. yard tracks and switching leads to serve coal mine near Ellis, Ill., $330,000; replacing present open-deck pile trestle at Oakford, Ill., by reconstructing creosoted-treated ballast deck piling trestle. $175,000.

▲ **Ill., Chicago**—STREET LIGHTING—City, City Hall, Zone 2, street lighting, $8,000,000.

La., Leesville—SWIMMING POOL, etc.—Town, $250,000 bond election June 5, swimming pool and civic center. Brown & Butler, 1055 Nicholson Dr., Baton Rouge, consult. engrs.

Missouri—RURAL DISTRIBUTION LINES—Cuivre River Electric Co-operative, Troy, acquisition lines and improvs., Lincoln Co. $325,000. Mitchell Drazen & Assoc., Forsythe Blvd., St. Louis, consult. engrs.

Mo., Kansas City—STADIUM—Interscholastic League Stadium Corp., c/o Bd. Educ., 9 and Locust St., plans by Raymond L. Voskamp and Frank R. Slezak, 112 E. 10 St., Kansas City 6, Mo., stadium, incl. parking, night lighting. $400,000. CD 1/25.

▲ **Nev., Ruth**—SHAFT—Nevada Mines Div. of Kennecott Copper Corp., 120 Broadway, New York, N. Y., sink 1,700 ft. shaft, 8x32 ft. at Pit No. 43. $7,000,000.

▲ **Oregon**—DAM—California-Oregon Power Co., Medford, Unit No. 1, 30 ft. dam, 3.3 mi. conduit on Clearwater River, $2,500,000; Power Unit No. 2, 26 ft. dam, 6 mi. conduits on Clearwater River, $2,500,000; State permission asked for power project Big Bend No. 2; 52 ft. dam on Klamath River, 2-generator power house, $8,173,980. A. C. Cummins, Medford, Ore., engr. CD 2/26/47.

Texas—OIL PIPE LINE—Tex-Harvey Pipe Line Co., Rankin, Tex-Harvey Oil Co. and Ashland Oil Purchasing Co., Midland, addnl. crude oil pipe line constr. and pumping station, $375,000; 40 mi. new crude oil gathering lines, $250,000. Rankin area, Reagan Co.

▲† **Washington**—SUB-STATIONS, etc.—Bonneville Power Admin., P. O. Box 3541, Portland, Ore., sub-station at new Kaiser plant, $1,700,000; enlarge Columbia substation, $1,200,000; two 111-kv lines between sub-stations, $100,000.

▲ **Alberta and Quebec**—NATURAL GAS TRANSMISSION LINES—Trans-Canada Pipelines Ltd., Canadian subsidiary of Delhi Oil Co., c/o C. W. Murchison, pres., 1315 Pacific St., Dallas, Tex., 2200 mile natural gas transmission line across Canada-east from Alberta oil country to Montreal, Que. $250,000,000. DeGolyer & MacNaughton and Oklahoma Pipe Line Eng. Co., c/o Bart Bldg., Dallas, Tex., U. S. A., consult. engrs. CD 2/20.

Que., Drummondville—ARENA—Owner, c/o Ligue des Proprietaires, J. A. Savard chn., G. Dumais, secy., plans by Audet, Tremblay & Audet, 52 Prospect St., Sherbrooke, Que., 5,000 person arena, opposite municipal garage. Approx. $400,000. CD 12/11.

CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
May 22, Massachusetts

BIDS ASKED—BUILDINGS

▲ Mass., Holyoke — HOSPITAL — B.A. 5/25 — Holyoke Hospital, Beech St., hospital addn., alterations, Beech St. $1,600,000. Plans deposit $50. CD 2/2.

CONTRACTS—BUILDINGS

▲ Southern New England Constr. Co., 983 Main St., Hartford, Conn., Low Bidder, $1,090,000, Contr. E-51-60 HOME for AGED, 2 Holcomb St., HARTFORD, CONN. City, 550 Main St., Hartford, Conn. Bids May 3. CD 4/9.

▲ Hasson & Downes, 55 W. Main St., New Britain, Conn., Contract Awarded, $1,104,965, manufacturing PLANT, PLAINVILLE, CONN. Marlin Rockwell Corp., Standard Div., Woodford, N. J. CD 4/16.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 29, New Jersey
STREETS AND ROADS
May 22, Maryland May 25, Pennsylvania

BIDS ASKED—BUILDINGS

N. Y., New York—HOUSING—B.A. 5/22—New York City Housing Auth., 63 Park Row, Zone 17, general constr.; heating and ventilating; electric work; plumbing; elevators for Throgg's Neck Houses (Proj. No. NY 5-15) in area bounded generally by Balcom, Randall Aves., E. 177 St., Calhoun, Dewey, Swinton and Sampson Aves., Bronx Boro. Plans deposit $75, $25 for elevators. CD 10/18/50.

LOW BIDDERS—BUILDINGS

▲ H. R. H. Constr. Co., 16 W. 46 St., New York, N. Y. Low Bidder. $2,778,000. Foundation and general constr.***Jesse Kahn, 242 E. 20 St., New York, N. Y. $335,689, plumbing for Sect. II, incl. Buildings Numbered 3, 5, 6, and 7 of St. Nicholas HOUSES (Proj. No. NY-5-10) in area bounded generally by W. 128 St., 7 Ave., W. 127 St., and 8 Ave., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., 63 Park Row, New York 28, N. Y. Bids May 8. CD 5/3.

▲ Lester J. Dworman, 215 Montague St., Brooklyn 2, N. Y., Low Bidder. $7,426,900. Construct, manage finance 1,000 unit private rental HOUSING proj. N-06, Sects. 1, 2, 3 and 4 at U. S. Naval Air Station and U. S. Naval Air Test Center, PATUXENT RIVER, MD. Dist. Pub. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids May 7. CD 4/27.

CONTRACTS—BUILDINGS

▲ Oak Estates, c/o A. H. Salkowitz, archt., 37-60 82 St., Jackson Heights, N. Y. Owner Builds. $10,000,000. 500 one family HOUSES on 100 acre site, 229 St. and Horace Harding Blvd., BAYSIDE, N. Y.

▲ Belmar Homes, c/o D. J. Levinson, archt., 92-32 Union Hall St., Jamaica, N. Y. Owner Builds. Approx. $1,000,000. 75 one family houses, Francis Lewis Blvd. and 20 St., FLUSHING, N. Y.

▲ Clearview Housing Corp., c/o Benjamin Braunstein, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Separate Contracts. $3,500,000. four 3 story and 3 six story apartments, in area bounded by 71 Ave., Parsons Blvd., Jewel Ave. and 164 St., FLUSHING, N. Y. CD 11/10.

▲ Martucci & Son, 13 Hillside Ave., Roslyn, N. Y. Owner Builds. Approx. $3,500,000. 102 one family HOUSES on 60 acre site bounded by Old Northern Blvd., Mineola and Glen Aves. and Main St., ROSLYN, N. Y.

▲ Montclair Vista Homes, c/o Leonard G. Feinen, archt., 320 Lincoln Ave. Hasbrouck Heights, N. J. Owner Builds. $3,000,000. 200 one-family HOUSES on 70-acre site between Grove and Broad Sts., CLIFTON, N. J.

▲ Cromwell Terrace Apartments, c/o Neil J. Convery, archt., 27 Washington St., Newark, N. J. Owner Builds. $3,000,000. Seven 5 story APARTMENTS, for 293-families on 4½ acre site, Mt. Prospect Ave., NEWARK, N. J.

▲ Timely Homes, c/o Rudolph L. Novak, archt., 713 Main Ave., Clifton, N. J. Owner Builds. $1,500,000. 150 one family HOUSES, Victoria Ave. and Paramus Rd., PARAMUS, N. J.

▲ Pine Brook Hills Homes, c/o Lawrence R. Moon, archt., 36 Grand Ave., Englewood, N. J. Owner Builds. $2,000,000. 100 one family HOUSES, Maple Ave., RIDGEWOOD, N. J.

▲ Guidera-Goodman Co., c/o Kelly & Gruzen, archts., 80 Fifth Ave., New York 3, N. Y. Owner Builds. $1,500,000. 11 story APARTMENT, Boulevard East between 65 and 66 Sts., WEST NEW YORK, N. J.

▲† Morrow Bros., Inc., 2315 N. Charles St., Baltimore, Md. Contract Awarded. $5,000,000. Altering MESS HALL, GALLEY and 16 other bldgs., ANNAPOLIS, MD. Dpt. Navy, U. S. Naval Academy, Pub. Wks. Officer, Annapolis, Md. CD 4/9.

▲ Cross Country Gardens, Inc., 2111 N. Charles St., Baltimore, Md. Owner Builds. $3,000,000. 78 HOUSES, 3000 and 3100 blocks, Glen Ave., BALTIMORE, MD. Harry L. Katz, 3212 Gwynns Falls Parkway, Baltimore, Md., archt.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 25, Kentucky
STREETS AND ROADS
May 25, Kentucky May 30, Louisiana

BIDS ASKED—BUILDINGS

▲ Fla., Orlando—SCHOOL—B. A. 5/25—Orange Co. Bd. P. Instruction, Orlando, North Orlando Senior High School. $1,000,000. James Gamble Rogers II, Winter Park, archts. Extended date. CD 2/28.

▲ Ala., Huntsville—HOUSING—B.A. 5/29—Huntsville Housing Auth., Huntsville, Proj. ALA 47-1, Council Courts, 180-housing units, $1,500,000. Plans deposit $50. Paul W. Hofferbert, Gadsden, archt.

SOON LETS CONTRACT—BUILDINGS

▲ Ky., Ford — GENERATING PLANT — East Kentucky Rural Electric Co-operative Assn., Winchester, soon lets contract structural steel for electric generating plant. Total cost $30,000,000. Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., engr. CD 12/16/49, under Kentucky.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ T. A. Loving & Co., Bank of Wayne Bldg., Goldsboro, N. C. Low Bidder. $1,377,672, est. $400,000-$500,000. bridge over Bogue Sound (Inland Waterway) between Morehead City and Atlantic Beach, 0.697 mi. Proj. 2037, Carteret Co. NORTH CAROLINA. State Hy. & Pub. Wks. Comn., Raleigh, N. C. Bids May 8. CD 4/20.

▲† Clemens Constr. Co., River Rd., West New York, N. J. Low Bidder, $1,772,400, Levee L-40, behind Florida's Lower East Coast Canal, 2.4 mi., Palm Beach Co., FLORIDA, U. S. Eng., P. O. Box 4960, Jacksonville, Fla. Bids Apr. 26. CD 4/18.

▲† Central Contg. Co., Oshkosh, Wis. Low Bidder. $1,083,290, est. $800,000. 4 and Buchanan Sts. pump plants in connection with flood wall, CIVENG 15-029-51-124, KENTUCKY. U. S. Eng., 300 Broadway, Louisville 3, Ky. Bids May 8. CD 4/9.

▲ J. B. Michael & Co., 1021 Heywood St., Memphis, Tenn., Low Bidder, $1,474,030, filter plant extens., NASHVILLE, TENN. City, City Hall, Nashville, Tenn. Bids Apr. 27. CD 3/22.

LOW BIDDERS—BUILDINGS

▲ J. A. Jones Constr. Co., 133 Ellis St., N.E., Atlanta, Ga., Low Bidder. $8,653,500, 990 Negro HOUSING UNITS, ATLANTA, GA. Atlanta Housing Auth., Trust Co. of Georgia Bldg., Atlanta, Ga. Bids May 8. CD 4/11.

CONTRACTS—HEAVY CONSTRUCTION

▲† Virginia Engineering Co., Melson Bldg., Newport News, Va. Contract Awarded, $4,613,000. construction of expansion facilities at Fleet Air Defense Training Center, DAM NECK, VA. Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, 11, Va. Bids Apr. 17. CD 3/28.

▲† Hardaway Contg. Co., 15 - 11 St., Columbus, Ga. Contract Awarded. Approx. $5,000,000. streets, interior railroads, etc. for Arnold Air Force Development Center, TULLAHOMA, TENN. U. S. Eng., Tullahoma, Tenn. CD 7/27.

CONTRACTS—BUILDINGS

▲ Ray M. Lee Co., 1004 Edgewood Ave. N.E., Atlanta, Ga., Contract Awarded, $974,375, men's dormitory: $1,192,913 girl's DORMITORY, at University of Georgia, ATHENS, GA. Bd. Regents, University System of Georgia, 120 Ivy St. S.E., Atlanta, Ga. Bids Apr. 26. CD 5/2, under LB.

▲ J. A. Jones Constr. Co., 133 Ellis St. N.E., Atlanta, Ga. Contract Awarded. $1,585,500. LIBRARY at Georgia School of Technology, ATLANTA, GA. Bd. Regents, University System of Georgia, 20 Ivy St. S.E., Atlanta, Ga. Bids Apr. 25. CD 4/30, under LB.

▲ John Rasmussen, Bradenton, Fla. Contract Awarded. $1,049,050, Veterans Memorial HOSPITAL, BRADENTON, FLA. Manatee Co., Bradenton, Fla. Bids May 2. CD 4/25.

▲ Taylor Constr. Co., 2875 N. Lejeune Rd., Miami, Fla., Contract Awarded $1,200,000. 72 APARTMENT UNITS, MIAMI BEACH, FLA. Allison Apartments, c/o contractor.

▲ R. P. Farnsworth Co., P.O. Box 2029, Baton Rouge, La. Contract Awarded. $1,728,000. HOUSING Projs. LA 6-3 and LA 6-4, MONROE, LA. Monroe Housing Auth., Monroe, La. Bids May 2, awarded May 4. CD 4/5.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 22, Indiana May 25, Illinois
STREETS AND ROADS
May 22, Indiana, Ohio May 25, Illinois

BIDS ASKED—BUILDINGS

Ill., Rock Island—PLANT, etc.—Bids Asked—J. I. Case Co., Rock Island, 70,000 sq. ft. mfg. plant and 2 story 30,000 sq. ft. office. $900,000. Eschweiler & Eschweiler, 72 E. Mason St., Milwaukee, Wis., archts.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ Great Lakes Dredge & Dock Co., 25 E. Jackson St., Chicago, 4, Ill. Low Bidder, $1,102,023, Lincoln Park exten., bulkheads, piers, jetties, steel piling gravel and concrete fill from Foster to Ardmore Ave., CHICAGO, ILL. Chicago Park Dist., 425 E. 14 St., Chicago, 5, Ill. CD 6/11/45.

CONTRACTS—HEAVY CONSTRUCTION

Bushman Constr. Co., 4638 Mill Creek Parkway, Kansas City, Mo. Contract Awarded. $997,878, c. conc. 6.02 mi. U. S. 51. Winnebago and Ogle Counties, ILLINOIS. State Div. Hys., State Capitol, Springfield, Ill. Bids Apr. 20, awarded May 4. CD 4/24, under LB.

▲ Arrow Petroleum Co., 7419 Franklin St., Forest Park, Ill. Contract Awarded. $509,208, bit. resurf. 25.43 mi. Ill Rte. 37, Jefferson and Marion Counties; Peter Baker & Sons Co. and Skokie Valley Asphalt Co., Wauconda, Ill., $898,732, bit. surf. 16.86 mi. Ill. Route 68, Skokie Hy., Lake Co., ILLINOIS. State Div. Hys., State Capitol, Springfield, Ill. Bids Mar. 30, awarded May 4. CD 4/4, under LB.

▲ S. A. Healy Co., 20 N. Wacker Dr., Chicago, Ill., Contract Awarded, $1,024,409, pumping station on Congress Expressway at Fifth St., Maywood, CHICAGO, ILL. Cook Co., County Bldg., Chicago 2, Ill. CD 4/19, under LB.

▲ Thomas McQueen Co., Forest Park, Ill. Contract Awarded, $1,658,318, grade separation between Canal and Des Plaines Sts.; Allied Structural Steel Co., 20 N. Wacker Dr., Chicago, Ill., $1,180,286, steel for same, both Congress Expressway, CHICAGO, ILL. Cook Co., County Bldg., Chicago, 2, Ill. CD 4/19, under LB.

▲ Blackwell Corp., 2000 St. Clair Ave., East St. Louis, Ill. Contract Awarded, $5,589,082, est. $4,900,000, trunk relief sewers, Proj. 18, Sects. A, B, and C, incl. Sect. A, Mississippi River to gate structure, 5,250 lin. ft. 12½x12½ ft., rein.-con. box and 470 lin. ft. 9x10½ ft. rein.-con. box, Sect. B from gate structure to Gay Ave. to 13 and Illinois Ave. 7,000 lin. ft. 12½x12½ ft., rein.-con. box Sect. C, 13 to 20 on Illinois Ave. to junction with 42-in. line station 72/10 incl. 4,226 lin. ft. 12½x12½ ft. and 2,915 lin. ft. 11x12 ft. rein.-con. box sewers, appurtenances, etc., EAST ST. LOUIS, ILL. East Side Levee & Sanitary Dist., Dan Foley, pres., 2642 McCasland Ave., East St. Louis, Ill. Bids Jan. 10, awarded May 7. CD 1/17, under LB.

CONTRACTS—BUILDINGS

Borchet & Son Building Contractors Inc., 10546 S. Artesian Ave., Chicago 43, Ill. Owner Builds. $900,000. 95 HOMES, 87 and Narragansett Sts., CHICAGO RIDGE, ILL.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 22, Kansas, Oklahoma
STREETS AND ROADS
May 22, Kansas, Oklahoma
May 25, Kansas, Minnesota

▲† Missouri—B.A. 5/24—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., flood protection sys. on north bank of Missouri River, North Kansas City, $3,900,000. CD 6/1/44.

▲† Tex., Amarillo—MESS HALLS, etc.—B.A. 5/28—U. S. Eng., Box 61, Tulsa 2, Okla., 5 or more mess halls and also administrative bldgs., Inv. No. Eng. 34-066-51-31. $2,500,000. (Correction—bid date). CD 4/26.

▲† N. M., Los Alamos—SERVICE AREA—B. A. 5/29—U. S. Atomic Energy Comn., c/o Chief, Contract Div., Los Alamos, Phase A, guard stations, utility lines, power and steam lines, shop, administration bldg., etc., TA-16, Service Area, Proj. N, Inv. No. 291-51-107. $1,200,000-$1,600,000. Plans deposit $50.

† Tex., Amarillo—ELECTRIC POWER DISTRIBUTION SYS—B. A. 6/1—U. S. Atomic Energy Comn., Joseph R. Turan, chief, Const. Div., Los Alamos, N. M., electric power distr. sys. at Silas Mason Pantex Ordnance Plant, Inv. 291-51-98. $750,000-$900,000. CD 4/11.

BIDS ASKED—BUILDINGS

Minn., St. Paul—SCHOOL—B.A. 5/23—Bd. Educ., Independent School Dist. 3, T. C. Schultz, clk., 1 story, Falcon Heights School, $345,000. Plans deposit $15. Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, archts. CD 12/13.

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Rd. and east 3 St. and west of White Bear Ave. $4,000,000. Extended date. Associated Architects & Engineers, 416 Endicott Bldg., St. Paul, archts. and engrs. CD 3/28.

▲† **N. M., Los Alamos**—LABORATORY—B.A. 5/24—U. S. Atomic Energy Comn., Los Alamos, medical research laboratory. $1,500,000-$1,800,000. Plans deposit $50. Extended date. CD 3/7.

SOON LETS CONTRACT—BUILDINGS

▲ **Tex., San Antonio**—MERCANTILE—Joskes of Tex., Alamo Plaza, soon lets contract 4 story bsmnt., masonry mercantile altrsations existing store, air-conditioning, etc. $2,000,000. W. E. Simpson Co., 945 Milam Bldg., engr. Bartlett Cocke, 3501 Broadway, archt. CD 4/17.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ **The Rov Richards Constr. Co.**, Carrollton, Ga. Low Bidder. $812,698. Contr. 1, 48 mi. rural distr. lines, Taney Co., Mo., and Marion and Boone Counties, Ark. **Hoak Constr. Co.**, 621-6 33 St., Des Moines, Ia., $658,684, Contr. 11, 42 mi. 161 KV rural distr. Lines, Greene, Christian, Stone and Taney Counties, Mo., Proj. 72A Gentry, MISSOURI and ARKANSAS. Northwest Electric Power Co-operative, Inc., Cameron, Mo. Bids Apr. 25. CD 4/18.

▲† **Brezina Constr. Co. and H. H. Hackett & Sons,** Box 1388, Rapid City, S. D. Low Bidder. $1,441,000. Quarters, mess halls and facilities at Rapid City Air Force Base, near Weaver, RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Apr. 25.

† **Consolidated Steel Co.**, Orange, Tex. Low Bidder, $690,000. gates and hoists for Ten Killer Ferry Dam. Muskogee Co. OKLAHOMA. U. S. Eng., Box 61, Tulsa, Okla., Bids Apr. 20. awarded Apr. 27.

† **Joe W. Hendrix Co.**, Commercial Natl. Bank Bldg., Shreveport, La. Low Bidder. $573,505. west embankment at Garza-Little Elm Dam and Reservoir, near Wylie, Inv. No. CIVEN(K)-443-51-55, TEXAS. U. S. Eng., 1127 Texas & Pacific Bldg., Fort Worth, Tex. Bids May 2. CD 4/4.

LOW BIDDERS—BUILDINGS

▲ **W. C. Smith, Inc.**, 413 Bradley Bldg., Duluth, Minn. Low Bidder. $1,858,242. 200 DWELLING units, admin. bldg., incl. street grading, paving, sidewalks, and utilities, DULUTH, MINN. Duluth Housing & Redevelopment Auth., 201 City Hall, C. Liscomb, chn., Duluth, Minn. Bids May 1. CD 4/18.

▲ **University of Minnesota**, R. S. Callaway, purch. agt., 323 Admin. Bldg., Main Campus, Minneapolis, Minn. rejected bids Feb. 21, superstructure of Mayo Memorial Medical Center on Main Campus, MINNEAPOLIS, MINN. L. S. $8,647,000, est. $9,500,000. Will re-advertise. CD 3/13, under LB.

Castleberry School Dist., Castleberry, via Fort Worth, Tex., cancelled bids to have been opened Apr. 17, HIGH SCHOOL FORT WORTH, TEX. Est. $553,294. CD 4/9.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Hoak Constr. Co.**, 621 63 St., Des Moines, Ia. Contract Awarded. $1,197,062. 388 mi. rural distr. lines, 21.14 mi. line changes, Dent, Phelps, Shannon and Texas Counties, MISSOURI. Intercounty Electric Co-operative, Licking, Mo. CD 5/3, under LB.

† **Utilities Constr. Co.**, Exchange Bldg., Nashville, Tenn. Contract Awarded. $672,580. 57 mi. 161 KV transmission line Springfield to Carthage, Proj. ISPA 404, MISSOURI. Southwestern Power Admin., Douglas G. Wright, Admin. Petroleum Bldg., Tulsa, Okla. CD 4/27, under LB.

▲ **Roy Richards Constr. Co.**, Carrollton, Ga. Contract Awarded. $812,697. 48 mi. rural distr. lines, Taney Co., Mo. and Marion and Boone Counties, Ark.*****Hoak Constr. Co.**, 621 63 St., Des Moines, Ia., $658,684, 42 mi. rural distr. lines, Greene, Christian, Stone and Taney Counties*****Allis-Chalmers Mfg. Co.**, 1126 S. 70 St., Milwaukee, Wis., $80,000, sub-station power equip., near Missouri City, MISSOURI and ARKANSAS. Northwest Electric Power Co-operative, Cameron, Mo. Grand total $2,271,381. Lutz & May, Finance Bldg., Kansas City, Mo., engrs. CD 5/4, under LB.

Center Constr. Co., Carson, N. D. Contract Awarded. labor, $150,557, material, $581,000, total $731,557, 581.5 mi. rural distr. line and sys. imprvs., Morton Co., NORTH DAKOTA. Mor-Gran-Sou Electric Co-operative, Inc., Flasher, N. D. Associated Engineers, 206 12 St., Bismarck, N. D., engrs. CD 12/13/48.

▲ **Austin Bridge Co.**, 1000 Singleton Blvd., Dallas, Tex., Contract Awarded. $1,123,000. Forest Ave. vehicle and pedestrian viaduct or bridge, DALLAS, TEX. Dallas Co., Court House, Tex. Bids Apr. 16, awarded May 2. CD 3/26.

▲ **M. E. Worrell & Worrell & Watkins**, Box 373, Longview, Tex., Contract Awarded. $1,370,720. Hampton-Inwood Bridge across Trinity River, DALLAS, TEX. Dallas County, Court House, Dallas, Tex. Bids Apr. 19, awarded May 7. CD 4/26, under LB.

▲ **Atlantic Constr. Co.**, Box 14908, Houston 21, Tex. Contract Awarded. $529,000. mess hall, facilities; $998,034, 12 barracks, Inv. No. Eng. 41-243-51-50, LACKLAND AIR BASE, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids May 1, awarded May 4.

Sisco Electric Co., P. O. Box 88, Conroe, Tex. Contract Awarded, $857,289. 730 mi. rural distr. line, Socorro Co. NEW MEXICO, Socorro Electric Co-operative, Inc., Socorro, N. M. Tynes & Loftin, 345 Korber Bldg., Albuquerque, N. M., engrs. CD 5/17/50.

CONTRACT—BUILDINGS

▲ **Austin Co.**, 16112 Euclid Ave., East Cleveland, Contract Awarded, Approx. $1,000,000 general constr. 2 story, 125x200 ft., brick, steel newspaper PLANT, DENVER, COLO. Scripps-Howard, 230 Park Ave., New York, N. Y.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 31, June 1, California
STREETS AND ROADS
May 24, Nevada May 31, June 1, California

▲ **Calif., Bakersfield**—B.A. 5/28—Kern Co., Court House sanitary sewerage systems for Union Ave. Sanitation Dist., Court House, Bakersfield, $1,065,241. R. E. White, 1716 Oak St., engr. CD 3/14.

BIDS ASKED—BUILDINGS

▲ **Calif., San Diego**—ADMINISTRATION—B.A. 5/29—San Diego Unified School Dist., 825 Union St., 2 and 3 story rein.-con. administration bldg., Normal St. and Campus Ave. $1,000,000. Plans deposit $35. Clyde Hufbauer, 1975 5 Ave., archt. CD 11/16/50.

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **Gibbons & Reed Co.**, 695 W. 9 St. N., Salt Lake City, Utah, Low Bidder. $1,021,922, est. $1,389,116, earthwork, structures for Yuma Levee, Colorado River Front Work and Levee System Proj., Spec. DC-3369, ARIZONA Bureau Reclamation, Dpt. Interior, Yuma, Ariz. Bids May 1. CD 3/30.

▲ **Western Contg. Co.**, 400 Benson Bldg., Sioux City, Ia. Low Bidders. $1,866,240, Schedules 1 and 2; **Winston Bros.**, 1532 S. California Ave., Monrovia, Calif. $1,711,328, Schedules 3 and 4, earthwork, canal lining and structures for Mohawk Canal Station 1547 plus 91 to Station 205 plus 74 and Tyson Protective dike and outlet channel, Wellton-Mohawk Div., Gila Proj. Spec. DC3375, ARIZONA. Bureau Reclamation Dpt. Interior, Yuma, Ariz. Bids Apr. 27. CD 4/3.

▲ **Basich Bros. & N. L. and R. L. Basich**, Garvey, Calif. Low Bidder, $470,990, plant mix surf. 46 mi. various portions hys. near Sandy Beach Rd. Hoitville, Calipatria and Heber and Brawley, Imperial Co.; $1,049,143, grading plant mix surf. 2 rein.-con. bridges near Whitewater, Riverside Co., CALIFORNIA State Div. Hys., 120 S. Spring St., Los Angeles, Calif. Bids May 3, CD 4/11.

▲ **State Div. Hys.**, P. Wks. Bldg., Sacramento, Calif., rejected bids Apr. 11, grading, grade separation structure 1.3 mi. between Army and 17 Sts., San Francisco Co., CALIFORNIA. L. B. $1,446,641. CD 4/20, under LB.

▲ **Manuel Smith**, Rt. 1, Box 352 Winston, Calif. Low Bidder $734,270, collection lines for sewerage sys. at Seaside; **Stolte Inc.**, 8451 San Leandro Blvd., Oakland, Calif., $346,188, treatment plant for sewerage sys. at Seaside, SALINAS, CALIF. Seaside County Sanitation Dist., Court House, Salinas, Calif. Bids May 1. CD 4/3.

LOW BIDDERS—BUILDINGS

▲ **Marion Co.**, Salem, Ore., rejected bids Apr. 26, 4 story, 150x240 ft concrete, steel COURT HOUSE, SALEM, ORE. L. B. $2,038,700. Will re-advertise. CD 5/1, under LB.

▲ **Carl N. Swenson Co.**, P. O. Box 558, San Jose, Calif. Low Bidder. $1,120,000. new Goodwin Ave. SCHOOL and Herbert Hoover SCHOOL Unit No. 2 addns., REDWOOD CITY, CALIF. Redwood City Elementary School Dist., James and Duane Sts., Redwood City, Calif. Bids May 1. CD 4/24.

▲ **Moore & Roberts**, 693 Mission St., San Francisco, Calif. Low Bidder, $1,041,041, high SCHOOL, on El Camino Real, SOUTH SAN FRANCISCO, CALIF. South San Francisco Unified School Dist., South San Francisco, Calif. Bids May 3. CD 4/23.

▲ **Elmer J. Freathy**, 1432 Kearney St., El Cerrito, Calif. Low Bidder. $1,006,277 base bid; $153,000 alt. 1 deduct for omitting 3rd floor San Jose HOSPITAL WING addn., San Jose, CALIF. Bd. Directors San Jose Hospital, 14 and E. Santa Clara Sts. SAN JOSE, CALIF. Bid 4/26. CD 3/28.

CONTRACTS—HEAVY CONSTRUCTION

† **Daley Corp.**, Box 67, North Station, San Diego, Calif. Contract Awarded. $911,954. exten. RUNWAYS for jet operation MIRAMAR, CALIF. Dpt. Navy, Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Apr. 24, awarded May 1. CD 5/1, under LB.

CONTRACTS—BUILDINGS

▲ **Farmer & Godfrey**, N. 36 St., Phoenix, Ariz. Contract Awarded. $2,014,098, 346 masonry HOUSING UNITS, PHOENIX, ARIZ. City, City Hall, Phoenix, Ariz. Bids Apr. 4, awarded May 4. CD 4/26, under LB.

▲ **W. E. Robertson Co.**, 411 S. First St., Phoenix, Ariz., Contract Awarded. $2,750,000, 283 DWELLINGS, Campbell and 7 Ave., PHOENIX, ARIZ. Parkview Homes, 4015 W. Jefferson St., Los Angeles, Calif. Max Maltzman, 4015 W. Jefferson Blvd., Los Angeles, Calif., archt.

▲ **Gordon R. Branch, Inc.**, 10710 Valley Spring Lane, Los Angeles, Calif. Owner Builds. $1,375,920. 199 frame, stucco DWELLINGS in tract 11492, LA HABRA, CALIF.

▲ **M & K Corp.**, 405 Montgomery St., San Francisco, Calif. Contract Awarded, $3,649,412, base bid plus Alt. 1, Abraham Lincoln SCHOOL, SAN FRANCISCO,

CALIF., City Bd. Educ., Civic Center, San Francisco, Calif. Bids Apr. 19, awarded May 7. CD 4/26, under LB.

ALASKA

BIDS ASKED—BUILDING

▲† **Alaska, Whittier**—PLANT—B.A. 5/25—U. S. Eng., New Washington Hotel, Seattle 1, Wash., permanent heating and power plant, incl. moving equipment from Dutch Harbor, 595-502-51-94. $1,500,000. Plans deposit $100. CD 3/14.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
May 22, British Columbia

BIDS ASKED—BUILDINGS

B. C., Oak Bay—SCHOOL—B.A. 5/23—School Dist. No. 61, 1047 Joan Crescent, Victoria, 2 story frame, stucco junior-high school, $600,000. Plans deposit $100.

▲ **Ont., Ottawa**—LABORATORY—B.A. 5/23—Secy. Dpt. P. Wks., Hunter Bldg., laboratory bldg., less structural steel for Divisional Bldg. Research, National Research Council, Montreal Road Laboratories, approx. $1,000,000. Plans deposit $100. G. Brault, c/o owner, archt.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Morrison-Knudson Co., Inc.**, 319 Broadway Ave., Boise, Idaho, Contract Awarded. Total cost **$500,000,000**. section of power plant, for water power development for aluminum processing plant in Tweedsmuir Park, 400 mi. north of Vancouver, Kitimat, BRITISH COLUMBIA. Aluminum Co. of Canada Ltd., Sun Life Bldg., Montreal, Que. Awarded May 4. CD 1/9.

Northern Constr. Co. & J. W. Stewart Ltd., 1304 Hornby St., Vancouver, B. C. Contract Awarded. Approx. **$900,000**, dam 1,300 ft. along crest, 60 ft. high, 380 ft. width at base and sloping upward like triangle to 20 ft. at top, made of 250,000 cu. yd. rock and fill; will contain clay core to make it watertight for hydro-electric project, Wahleach Lake, BRITISH COLUMBIA. British Columbia Electric, 425 Carrall St., Vancouver, B. C. Awarded Apr. 21. CD 6/3/49.

▲ **H. J. O'Connell Ltd.**, 606 Cathcart St., Montreal, Que., Contract Awarded. Approx. **$1,000,000**, radar screen group of "S2" location in Quebec Region; **Magolire Couchon Ltd.**, 311 de la Salle St., Quebec City, Que., Approx. **$1,000,000**, radar screen group at "S1" location in Quebec Region, QUEBEC. Defence Constr. Ltd., 1247 Guy St., Montreal, Que.

CONTRACTS—BUILDINGS

▲ **Poole Constr. Co. Ltd.**, 10503 109 St., Edmonton, Alta., Contract Awarded. **$5,000,000**. cement PLANT EXTEN. EXSHAW, ALTA. Canada Cement Co. Ltd., Phillips Square, Montreal, Que. Awarded May 7.

▲ **Alexander Constr. Ltd.**, 10436 81 Ave., Edmonton, Alta., Contract Awarded. **$2,500,000**, 12 buildings for military base, PENHOLD, ALTA. Defence Constr. Ltd., Kensington Bldg., Winnipeg, Man. Bids Apr. 10, awarded May 7. CD 3/28.

▲ **Process Constr. Co., Inc.**, 20700 S. Figueroa St., Torrance, Calif., U. S. A. Contract Awarded. **$2,000,000**. Oil REFINERY to handle 4,000 bbl. daily, STETTLER, ALTA. Pacific Petroleum Ltd., Toronto General Trust Bldg., Calgary, Alta.

▲ **Acme Constr. Co. Ltd.**, 45 Canterbury St., St. John, N. B., Contract Awarded. **$1,112,236**, 4 story, bsmnt., sub-bsmnt., rein.-con., steel, brick, Y.M.C.A. BLDG., Hazen Ave., ST. JOHN, N. B. Y.M.C.A., St. John, N. B. Bids Apr. 17, awarded May 7. CD 3/23.

▲ **J. Turcotte Ltd.**, 106 Murray St., Quebec City, Que. Contract Awarded. Approx. **$1,000,000**. 225 bed HOSPITAL addn., Langelier Blvd., QUEBEC CITY, QUE. Quebec General Hospital, 191 Langelier Blvd., Quebec City, Que. CD 3/30.

LATIN AMERICA

BIDS ASKED—HEAVY CONSTRUCTION

Mexico, Monterey—Mexican Govt., Sria. de R. H., P. dela Reforma, 69, Mexico City, receiving bids May 28, WW. Plans deposit $23.12. CD 7/3/47.

AMERICANS ABROAD

BIDS ASKED—HEAVY CONSTRUCTION

† **Okinawa**—B.A. 5/31—U. S. Eng. (Okinawa Dist.), APO 331, c/o PM, San Francisco, Calif., steel bridge across Kokuba River at Naha, in Ryukyu Islands; incl. 2 rein.-con. abutments, incl. mfg., driving approx. 7,500 lin. ft. concrete bearing piles; construct 4 piers, incl. sinking and construction 540 lin. ft. rein.-con. caissons; erecting 5 steel half-through plate girder spans 60.5 ft., carrying 4 lanes of traffic and 2 sidewalks; construct concrete dock on the superstructure.

CONSTRUCTION REPORTS
Third Section

NEW ENGLAND

BIDS ASKED—BUILDINGS

† **Mass., Camp Edwards**—CONFINEMENT FACILITIES—B.A. 5/22—U. S. Eng., P.O. Box 2316, Boston, Zone 7, confinement facilities for prisoners, restoration of motor repair shops and grease racks, Eng. 19-016-51-48. Extended date. CD 5/7.

LOW BIDDERS—HEAVY CONSTRUCTION

Coleman Bros. Corp., 40 Central St., Boston, Mass. Low Bidder. **$200,485**. Contr. 172, aeration and sedimentation tanks, Nut Island, Sewage Treatment Plan, Quincy, BOSTON, MASS. State Metropolitan Dist. Comn., 20 Somerset St., Boston, Mass. Bids May 10. CD 5/2.

S. & M. Constr. Co., Inc., 30 Salmon St., Providence, R. I. Low Bidder. **$167,867**, construct sections 15 neighborhood streets, PROVIDENCE, R. I. Bd. Contract & Supply, Providence, R. I. CD 6/9/48.

LOW BIDDERS—BUILDINGS

James S. Kelliher, 1245 Hancock St., Quincy, Mass. Low Bidder. **$768,446**, Alternate I plus **$22,307**. HOSPITAL addn., Woodland Rd., Mass. 30 (C), STONEHAM, MASS. New England Sanitarium & Hospital, Woodland Rd., Stoneham, Mass. Bids May 3. CD 4/16.

CONTRACTS—HEAVY CONSTRUCTION

† **Gilbane Building Co., Inc.**—90 Calverly St., Providence, R. I. Contract Awarded. **$400,000**. replacing 14x14 in. beams supporting deck of 1,400 ft. Navy Pier, DAVISVILLE, R. I. CD 3/22.

† **N. B. King**, 26 Moore St., New London, Conn. Contract Awarded. **$214,000**. storage and distribution, U. S. Naval Station, Spec. 29157, QUONSET POINT, R. I. Pub. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass. Bids May 3. CD 4/13.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

New Jersey—HIGHWAY LIGHTING, etc.—B.A. 5/29—R. J. Abbott, comr. State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway Ave., Trenton, installing highway lighting and sign systems on Route 4 Parkway, Sects. 1 and 2, from Route 25 to New Brunswick Ave., Twp. Woodbridge, Middlesex Co., incl. Group A, lighting and sign sys. at Rte. 25 interchange and Group B-lighting sys. at Rte. 25 and at King George's Post Rd. interchanges. Plans deposit $10. Bids May 2 rejected. CD 4/16.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **N. C., Camp Lejeune**—TELEPHONIC COMMUNICATIONS—B.A. 5/25—Pub. Wks. Office, Bldg. 1005, Marine Barracks, alterations, rearrangements, imprvs. to telephonic communications, Spec. 25750. Plans deposit $10. Bids 3/19 rejected. L. B. **$104,865**. CD 3/29, under LB.

LOW BIDDERS—BUILDINGS

J. S. Stephens & Sons, State St. and N. Rome Ave., Tampa, Fla. Low Bidder, **$309,294**, Negro Elementary SCHOOL, TAMPA, FLA. Hillsborough Co. Bd. P. Instruction Court House, Tampa, Fla. Bids May 4. CD 12/9/48.

CONTRACTS—BUILDINGS

Daniel Constr. Co., 429 Main St., Greenville, S. C. Contract Awarded. Approx. **$500,000**. PLANT addn. GREENVILLE, S. C. Gayley Mills, c/o contractor.

Louis Ehrlich, 2927 Lake Forest Dr., Augusta, Ga. Owner Builds, **$400,000**, 80 APARTMENT UNITS, AUGUSTA, GA.

Sanford Kay Constr. Co., 420 Lincoln Rd., Miami Beach, Fla. Contract Awarded. **$600,000**. HOTEL, MIAMI BEACH, FLA. Forel Realty Corp., c/o contractor.

American Vitried Products Co., National City Bank Bldg., Birmingham, Ala. Owner Builds. **$500,000**. mfg. PLANT, BIRMINGHAM, ALA. CD 4/20.

John W. Horton, Tullahoma, Tenn. Owner Builds. Approx. **$500,000**. RESIDENTIAL development, TULLAHOMA, TENN. CD 1/26.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Ill., **East St. Louis**—HOUSING—B.A. 5/28—St. Clair County Housing Auth., James E. Haynes, exec. dir., 6 St. and Ohio Ave., general contract constr. 300-unit, brick, concrete John De Shields Homes, incl. community bldg. Charles B. Spencer, 929 A Missouri Ave., archt. CD 4/30, under LB.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Colorado**—LANDSCAPING—B.A. 5/22—Bureau Reclamation, Dpt. Interior, Grand Lake, Colo., landscaping for Granby Reservoir and Green Mountain Reservoir, Colorado Big Thompson Proj., Spec. 704C-189. L. N.

ENR INDEX NUMBERS

Index Base — 100		1913	1926	1949
Constr. Cost.	May '51	541.70	260.39	113.56
Bldg. Cost ..	May '51	399.87	216.16	113.67
Volume	Apr. '51	515	209	149

Activity This Week

As reported to ENR
(in millions of dollars)

Contracts by type of work

	This Week	Cumulative 20 wks 1951	1950	% chge
Waterworks .	$1.4	$88.7	$92.3	—4
Sewerage	8.6	129.9	88.2	+47
Bridges	5.8	116.4	137.5	—15
Highways	8.5	381.9	430.5	—11
Earthwork, Waterways .	1.0	211.9	147.0	+44
Buildings:				
Public	23.6	899.9	643.8	+40
Housg., pub.	5.4	209.2	93.8	+123
Housg., priv.	40.2	825.6	1,377.9	—40
Commercial.	9.1	256.2	359.6	—29
Industrial ..	21.4	1,988.3	411.0	+384
Unclassified .	27.0	607.0	338.6	+79

NOTE: Minimum size projects included are, Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

	Cumulative 20 wks 1951	1950	% chge
Corporate Securities	NA	$672.9	NA
Fed. loans, Priv. Constr.	NA	...	NA
State and Mun.: Excl. housing	NA	817.4	NA
Housing	NA	254.5	NA
Fed. Aid. non-fed. constr.	NA	...	NA
Total Non-Federal..	NA	$1,744.8	NA
FEDERAL	NA	...	NA
Total Capital	**NA**	**$1,744.8**	**NA**

GRACE TRACTOR SWEEPERS

Fit Most Wheel Tractors
Sweep right or left
6' or 8' overall width

GRACE CHIP SPREADERS

For Fast Uniform Coverage
On Seal Coat Jobs
Built-in trailing equipment
Folding operator platforms
Timken bearing wheels
Tires changeable without deflating

W. E. GRACE MFG. CO.
6015 S. Lamar St. Dallas, Texas

McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

† **Colorado**—SUB-STATION—B.A. 5/22—Bureau Reclamation, Dpt. Interior, Fort Collins, constr. Fort Morgan sub-station addn., Colorado-Big Thompson Proj., Spec. 704C-179. Extended date. CD 4/26.

Ia., **Washington**—B.A. 5/22—Washington Co., surf. roads, $65,000.

† **Neb., Hastings**—FACILITIES—B.A. 5/22—Pub. Wks. Officer, 9th Naval Dist., Great Lakes, Ill., major repairs, rehabilitation and imprvs. to facilities at NAD, No. 28971.

Colorado—B.A. 5/29—Bureau Reclamation, Dpt. Interior, Indianola, Neb., Bonny Reservoir Development, Public Use Area, Phase I, St. Francis Unit Upper Republican Div., Missouri River Basin Proj. Spec. 701C-192. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

† **Texas**—B.A. 5/29—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, East Range Road relocation, Belton Dam and Reservoir, near Belton, Inv. No. CIVENG 41-443-51-56. $90,000. Plans deposit $25. CD 5/9, under LB.

† **Wyoming**—B.A. 5/29—Bureau Reclamation, Dpt. Interior, Casper, earthwork, asphaltic lining Station 30 plus 34.1 to Station 54 plus 00 Casper Canal, Kendrick Proj., Spec. 703-C-184. L. N. McClellan, Bldg. 1A, Denver Federal Center, Denver, Colo., ch. engr.

LOW BIDDERS—HEAVY CONSTRUCTION

Leone Constr. Co., Trinidad, Colo. Low Bidder, **$160,251,** oil processing 2.589 mi. State Hy. 152, Colo. Proj. S 0073 (1); stabilization structures, bit processing 4.409 mi., State Hy. 111, Colo. Proj. S-0079 (1), Costilla and Huerfano Counties, COLORADO State Hy. Dpt. 518 State Office Bldg., Denver, Colo. Bids May 3. CD 4/26.

Northwestern Eng. Co., 6000 Colorado Blvd., Denver, Colo. Low Bidder. **$103,673,** est. $111,349, stabilization, oil processing 5.125 mi. State Hy. 113, between Sterling and Peetz, Proj. F 009-1(1), Logan Co. COLORADO State Hwy. Dpt., 518 State Office Bldg., Denver, Colo. Bids Apr. 26.

E. E. Farrow, 6109 Forest Park Rd., Dallas, Tex. Low Bidder, **$139,038,** est. $70,000. sewage disposal plant, some lines, FARMERS BRANCH, TEX. City, Farmers Branch, Tex. Bids May 3. CD 4/27.

LOW BIDDERS—BUILDINGS

Robert E. McKee, General Contractor, Inc., 1918 Texas St., El Paso, Tex. Low Bidder. **$461,500,** general constr.; **W. R. Ackerman,** 1830 E. Yandell Blvd., El Paso, Tex., **$105,000,** plumbing, heating, air-conditioning, motor FREIGHT TERMINAL and mechanical service shop, EL PASO, TEX. Braswell Motor Freight Lines, 300 S. Campbell St., El Paso, Tex. CD 4/24.

▲ **New Mexico College of Agriculture & Mechanical Arts,** State College, Clovis, N. M., rejected bids Apr. 24, LIBRARY. L. B. $560,607; ADMINISTRATION, L. B. $545,469, CLOVIS, N. M. CD 4/16.

CONTRACTS—HEAVY CONSTRUCTION

J. Brown & E. Lundin, Mankato, Minn. Contract Awarded. $155,706. grav. surf. County Road 89 from Stebner Rd. to Miller T.H. 5 mi.; surf. 6 mi. County Rd. 4 on Rice Lake Rd.; surf. Midway Rd. from Duluth Auto Club to Adolph; surf. Road 9 from Howard Gnesen Rd. to Rice Lake Rd.; plant-mix bit. surf. Highland St. in Duluth from 59 Ave. west to Skyline Blvd., DULUTH, MINN. St. Louis Co., W. H. Borgen, aud., Duluth, Minn. Bids Apr. 24. CD 4/4.

FAR WEST

BIDS ASKED—BUILDINGS

† **Calif., Elverta**—GARAGE—B.A. 5/29—Bureau Reclamation, Dpt. Interior, Box 2511, Sacramento, prefabricated metal garage, storage bldgs. for line maintenance trucks, etc. at Elverta Central Valley Project.

Idaho, Moscow—HOME ECONOMICS—B.A. 5/29—University of Idaho, Moscow, home economics bldg. $500,000. CD 6/25/45.

LOW BIDDERS—HEAVY CONSTRUCTION

King Co., City-County Bldg., Seattle 4, Wash., rejected bids Apr. 23, C. conc. paving 1.16 mi. Ambaum Rd., Des Moines Way to 1 Ave. S., SEATTLE, WASH. CD 5/1, under LB.

CONTRACTS—BUILDINGS

† **L. H. Hoffman,** 715 S. W. Columbia St., Portland, Ore. Contract Awarded, $382,000, aquatic biology LABORATORY bldg. at Hanford Works, RICHLAND, WASH. Atomic Energy Comm., 1901 Constitution Ave. N. W., Wash., 25, D. C. CD 5/4.

Geo. Alexander Co., 8203 W. 3 St., Los Angeles Calif. Owner Builds, $628,000, 74 frame, stucco DWELLINGS, LOS ANGELES, CALIF. Chas. Du Bois, 2324½ Beverly Glen Blvd., Los Angeles, Calif.

McDonald Bros., 6401 W. Adams St., Los Angeles Calif. Contract Awarded, $548,630, est. $495,000. Clarence W. Pierce SCHOOL OF AGRICULTURE addns. LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Apr. 27, awarded May 1. CD 3/23/50.

William Simpson Constr. Co., 816 W. 5 St., Los Angeles, Calif. Contract Awarded. $500,000, 54 frame, stucco DWELLINGS, LOS ANGELES, CALIF. J. Hartley Tayler, Inc., 1225 S. Brand Blvd., Glendale, Calif. Paul J. Duncan, 13310 Moorpark St., Sherman Oaks, Calif., archts.

OFFICIAL PROPOSALS

Bids: May 29, 1951

Borings

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
EASTERLY END
OF CHANNEL
BORINGS
CONTRACT PN-170.001

Sealed proposals for making borings in the area at the easterly end of the channel at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111-8th Ave., New York 11, until 11:30 A. M. Tuesday, May 29, 1951, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, May 17, 1951.

Bids: May 31, 1951

Concrete Sewer and Catch Basins

SEALED PROPOSALS WILL BE RECEIVED AT THE OFFICE OF THE CITY PURCHASING AGENT, 4TH FLOOR, MOSQUE BUILDING, LAUREL & MAIN STREETS, RICHMOND, VIRGINIA, UNTIL BUT NOT LATER THAN 11 O'CLOCK, A. M., May 31, 1951 for constructing plain concrete sewer and catch basins, installing gas and water mains, installing electric conduits and manholes, remove car tracks and resurfacing with Asphalt in various streets within the City of Richmond, Va.

Approx. Quantities: 30,000 Cu. yds. excavation, 400 Lin. Ft. sewer, 3,300 Lin. Ft. gas & water mains, 10,000 Lin. Ft. electric conduit, 41,000 tons Asphalt in place, 96,700 Lin. Ft. car track rail removed.

Form of proposal, Plans and Specifications may be obtained upon application to the Director of Public Works, 217 Governor Street, Richmond, Virginia.

A charge of $25.00 will be made by the Department of Public Works for these plans, etc., which sum will not be refunded unless a bona fide bid is submitted, and the plans, etc., returned.

Each proposal must be accompanied by a certified or cashier's check made payable to the City of Richmond, equal to 5% of the amount of the proposal, or bid bond equal to 6% of the amount of the proposal.

The contract may be awarded by the Purchasing Agent to the lowest responsible bidder, who shall be determined in accordance with the rules and regulations governing purchases or contracts adopted and established by the Council, and in accordance with and pursuant to sections 5.09, 5.11 and 12.07 of the city charter.

J. W. Huffman,
City Purchasing Agent.

U. S. Government

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-186 will be received at P. O. Box 280, Reclamation Center, Casper, Wyoming, until 10 a.m., Mountain Standard Time, May 17, 1951, and then publicly opened, for furnishing labor and materials and performing all work for the construction of Rawlins substation, Kendrick Project, Wyoming. The work is situated at Rawlins, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, 318 New Customhouse, Denver 2, Colorado; I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all others $0.75 per copy, not returnable.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3425) will be received by Bureau of Reclamation, Superior, Nebraska, until June 13, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork and structures for laterals 1.7, 2.4, 4.3, 6.3, 9.2, 9.6, 10.4, 12.6, and 13.9, sub-laterals, and drains, Courtland lateral system, Bostwick Division, Nebraska, Missouri River Basin Project. The work is situated near Superior, Nebraska. Principal items are approximately: 122,000 cu. yds., excavation; 10,500 lbs., furnishing and installing metalwork; 3,200 lin. ft., furnishing and installing concrete pipe; and other work. Time allowed for completion will be 240 days. For particulars, address Bureau of Reclamation, Superior, Nebraska; or Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-184 will be received at the office of the Bureau of Reclamation, Reclamation Center, P. O. Box 280, Casper, Wyoming, until 10 A.M., Mountain Standard Time, May 29, 1951, and then publicly opened, for furnishing labor and materials and performing all work for the construction of earthwork and asphaltic lining, station 30+34.1 to station 54+00, Casper Canal, Kendrick Project, Wyoming. The work is situated approximately 32 miles southwest of Casper, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, 318 New Customhouse, Denver 2, Colorado; I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all other $0.50 per copy, not returnable.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3428) will be received by the Bureau of Reclamation, Denver, Colorado, until June 14, 1951, and then publicly opened for furnishing 3 motor-driven, vertical-shaft, turbine-type pumping units, each with a capacity of 25.3 cfs under a total head of 149 ft.; and 3 motor-driven, horizontal-shaft, centrifugal-type pumping units, each with a capacity of 8 cfs under a total head of 97 ft. for Columbia Basin Project, Washington. Delivery is desired within 365 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3427) will be received by Bureau of Reclamation, Davis Dam, Arizona, until June 20, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of architectural finish and miscellaneous metalwork installations for Davis Dam and Power Plant, Davis Dam Project. The work is situated at Davis Dam, Arizona. Principal items are approximately: furnishing and installing various types acoustical-unit ceiling, 14,000 sq. ft.; terrazzo floors, 14,200 sq. ft.; installing metalwork, 355,000 lbs.; furnishing and installing heating and ventilating systems, lump sum; and other work. Time allowed for completion will be 360 days. For particulars, address Bureau of Reclamation, Davis Dam, Arizona; or Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3409) will be received by Bureau of Reclamation, Bismarck, North Dakota, until June 12, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of the Fort Randall-Oahe 230-kilovolt transmission line, Transmission Division, South Dakota, Missouri River Basin Project. The work is situated betwene Fort Randall, South Dakota, and Oahe, South Dakota. The line will be 230-kilovolt, 3-phase, double-circuit, steel-tower, using ACSR conductor and galvanized-steel overhead ground wires, and approximately 135 miles long. Only one 3-phase circuit to be installed. All materials to be furnished by the contractor, except steel for towers, bird guards and pans, and stub angles for footings. Time allowed for completion will be 730 days for erecting steel towers and 854 days for stringing conductors and overhead ground wires. For particulars, address Bureau of Reclamation, Bismarck, North Dakota; or Building 1-A, Denver Federal Center, Denver, Colorado.

(Continued on page 91)

OFFICIAL PROPOSALS

Bids: May 22, 1951

Demolition of Storage Tank

Sealed bids or proposals for the demolition of the 250,000 gallon Elevated Storage Tank of the Hartsdale Water District on Paret Lane will be received by the Town Board of the Town of Greenburgh at the Board Rooms of said Board in the Lyceum Building, Broadway and Central Avenue, Tarrytown, N. Y., until 10:30 A.M., Tuesday, May 22, 1951.

Specifications may be obtained at the office of the Town Engineer, Lyceum Building, Tarrytown, N. Y.

Each bid must be accompanied by cash or certified check made payable to the Supervisor of the Town of Greenburgh in the amount of Five Hundred ($500.00) Dollars. Said deposit will be considered as a guarantee that the Bidder will enter into a contract for the proposed work if awarded to him and furnish the necessary bonds, and will be forfeited to the Town of Greenburgh if he fails to do so within the time specified. Deposit of the successful bidder will be returned as soon as the contract is signed and the necessary bonds delivered and approved by the Town Board. Deposits of unsuccessful bidders will be returned as soon as the contract is awarded.

The successful bidder will be required to furnish a Surety Company bond satisfactory to the Town Board in the amount of the contract, guaranteeing the successful completion of the work in accordance with the Plans and Specifications and the payment of all obligations arising thereunder. He will also be required to show to the satisfaction of the Town Board that he is carrying Workmen's Compensation Insurance as required by law, Public Liability Insurance with limits of not less than One Hundred Thousand and Two Hundred Thousand Dollars ($100,000-$200,000), and property damage insurance in the amount of One Hundred Thousand Dollars ($100,000).

The Town Board reserves the right to reject any or all bids or to accept any bid they deem to be in the best interests of the Town of Greenburgh.

By Order of the Town Board of the Town of Greenburgh
WILLIAM H. VAN DORN, Town Clerk
Dated, Tarrytown, N. Y., May 1, 1951.

Bids: May, 21, 1951

500,000 Gallon Elevated Water Tank

Sealed bids will be received until 9:00 A. M., May 21, 1951 A. D. in the office of the City Auditor and Clerk of Fort Lauderdale, Florida for an Elevated Water Tank for the Waterwork's System.

This work involves the installation of one (1) 500,000 gallon elevated steel water tank of tubular tower construction.—Alternate bids will be considered for one (1) 500,000 gallon reinforced concrete elevated water tank.

Bidding blanks may be obtained from the office of the City Engineer. Plans and Specifications for the work are on file in the office of the City Engineer, and copies thereof may be obtained at the office of the City Clerk upon payment of $25.00 for each set. Any bidder, upon returning such set promptly and in good condition, will be refunded his payment; and any non-bidder, upon so returning his set, will be refunded $15.00.

A certified check for 5% of the bid, made payable to the City of Fort Lauderdale, Florida, shall accompany each proposal as evidence of good faith and responsibility of the bidder. This check shall be retained by the City of Fort Lauderdale as liquidated damages, should the bidder fail or refuse to enter into a contract with the city of Fort Lauderdale for the execution of the work embraced in the proposal, in the event the proposal of the bidder be accepted.

The City of Fort Lauderdale reserves the right to reject any or all bids.

F. D. RANKINS, CITY MANAGER.

Bids: May 21, 1951

High Lift Pumps

Sealed bids will be received until 9:00 a.m., EST, May 21, A.D., 1951, in the office of City Auditor and Clerk for: High lift pumps at Water Treatment Plant, Fort Lauderdale, Florida.

Bidding blanks may be obtained from the office of the Engineers. Plans and specifications are on file in the office of the Engineer.

A deposit of $25.00 for plans and specifications and of $15.00 each for additional copies of plans or specifications will be required. All deposits for plans and specifications will be refunded upon their return in good condition within ten (10) days of the opening of bids.

A certified check for 5% of the total amount of the bid, made payable to City of Fort Lauderdale, Florida, shall accompany each proposal as evidence of good faith and responsibility of the bidder. This check shall be retained by the payee as liquidated damages should the bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the proposal, in the event the proposal of the bidder is accepted.

The Owner reserves the right to reject any or all bids. F. D. RANKINS
City Manager

Bids: May 21, 1951

New Filter Equipment

Sealed bids will be received until 9:00 a.m., EST, May 21, A.D., 1951, in the office of City Auditor and Clerk for New Filter Equipment at Water Treatment Plant, Fort Lauderdale, Fla.

Bidding blanks may be obtained from the office of the Engineers. Plans and specifications are on file in the office of the Engineer.

A deposit of $25.00 for plans and specifications and of $15.00 each for additional copies of plans or specifications will be required. All deposits for plans and specifications will be refunded upon their return in good condition within ten (10) days of the opening of bids.

A certified check for 5% of the total amount of the bid, made payable to: City of Fort Lauderdale, Florida, shall accompany each proposal as evidence of good faith and responsibility of the bidder. This check shall be retained by the payee as liquidated damages should the bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the proposal, in the event the proposal of the bidder is accepted.

The Owner reserves the right to reject any or all bids. F. D. RANKINS
City Manager

Bids: May 18, 1951

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until two o'clock p.m., advanced standard time, which is one o'clock p.m., eastern standard time, on May 18, 1951 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE NEW ENGLAND THRUWAY, PELHAM MANOR TO LARCHMONT, WESTCHESTER COUNTY, which constitutes CONTRACT NO. SPEC. SM-19.

Maps, plans, and specifications may be examined and obtained at the Bureau of Contracts and Accounts on the 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. and also in the office of J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y. and at the office of the consulting engineer, Robert W. Briggs, 271 North Avenue, New Rochelle, N. Y.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $16,825,00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $850.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. TALLAMY
Superintendent of Public Roads

Bids: June 25, 1951

Sewage Treatment Plant

Arlington County, Arlington, Virginia.

Sealed proposals for the construction of extensions to the sewage plant in Arlington, Virginia will be received by the County Board at the office of the County Manager, Court House, Arlington, Virginia, until 2:30 P.M., E.S.T., on June 25th 1951 and there publicly opened and read immediately thereafter.

The works will consist of providing all labor, materials, equipment and incidentals required for the construction of the plant extensions and improvements complete and ready to operate. The plant will provide for primary treatment of sewage and will include grit removal facilities, settling tanks, sluge digestion and filtration facilities, sludge incineration, and so forth, for an average daily sewage flow of twenty million (20,000) gallons. The work will include all general construction, building superstructure, equipment, heating, and plumbing and electrical works.

Plans, specifications, bidding and contracting documents may be examined at the office of the consulting Engineers, Alexander Potter Associates, 50 Church Street, New York, New York or at the office of the County Sanitation Division, Court House, Arlington, Virginia and there obtained upon deposit of $80.00. Full refund will be made to actual bidder for return of one (1) set, in good condition within two (2) weeks after closing date for receipt of bids; refund for return of all other sets in good condition, within the same period, will be 50% of the deposit.

All proposals must be on the form contained in the contract and specifications. Contractors, whether residents or non-residents in Virginia will be required to show evidence of a certificate of registration as required by Chapter seven (7) of Title fifty-four (54) of the Code of Virginia before their bids will be considered, if the bid is $20,000 (twenty-thousand) or more.

All bids must be accompanied by a certified check for acceptable bidder's bond in an amount of not less than 5% of the amount of the bid, made payable to the Treasurer of Arlington County, Virginia. Said checks will be returned to the unsuccessful bidders within fifteen (15) days after opening of bid.

The successful bidder will be required to furnish a performance bond conditioned upon a faithful performance of the contract and upon payment of all persons supplying labor and furnishing materials on the construction of the works.

No bidder may withdraw his bid within thirty (30) days after actual date of opening thereof.

The County Board of Arlington County, Virginia reserves the right to reject any or all bids and to waive any informality in the bid.

ARLINGTON COUNTY, VIRGINIA
A. T. Lundberg, County Manager

May 25, 1951

Bids: June 27, 1951

Dock, Outlet Chamber and Dredging

THE LINDEN ROSELLE SEWERAGE AUTHORITY
LINDEN, N. J.
CONTRACT No. III

1. Sealed proposals for the construction of CONTRACT No. III of a pollution abatement project in the City of Linden, New Jersey, will be received by the Linden Roselle Sewerage Authority in the Council Chambers, City Hall, Linden, until 8:00 P.M., E.D.S.T., on Wednesday, June 27, 1951, and there publicly opened and read immediately thereafter.

2. The work will consist of providing all labor, materials, equipment and incidentals required for the construction of the following:

Approximately 70,000 cu. yds. of dredging; 3000 sq. ft. of steel sheet piling; 2400 lin. ft. of steel bearing piles; 3100 lin. ft. of wood piles; 231 lin. ft. of 68" x 68" flat base reinforced concrete conduit and 24" dia. reinforced concrete and cast iron pipe; and miscellanous structural steel and concrete deck work and appurtenances.

3. Plans, specifications, bidding and contract documents may be examined at the office of the Consulting Engineers, Alexander Potter Associates, 50 Church Street, New York 7, N. Y., and there obtained upon a deposit of $200.00 per set.

Full refund will be made to actual bidders for return of one (1) set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, within the same period, will be fifty percent (50%) of the deposit.

4. All proposals must be on the form contained in the specifications.

5. All bids must be accompanied by a certified check or acceptable bidders' bond in the amount of ten (10%) per cent of the amount of the bid, made payable to The Linden Roselle Sewerage Authority. Said checks or bonds will be returned to the unsuccessful bidders not later than thirty (30) days after opening of bids.

6. The successful bidder in each of the several contracts will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon the payment of all persons supplying labor and furnishing materials on the construction of the work.

7. No bidder may withdraw his bid within thirty (30) days after closing date for receipt of bids.

8. The Authority reserves the right to reject any or all bids and to waive any informality in the bid.

BY ORDER OF THE SECRETARY OF THE LINDEN ROSELLE SEWERAGE AUTHORITY
DATED: May 17, 1951 Charles H. Gross

(Continued on page 92)

OFFICIAL PROPOSALS
(Continued from page 91)

Bids: May 29, 1951

State Road Work

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 21, SECTION 1B
Resurfacing Viaduct over Pennsylvania Railroad and Lehigh Valley Railroad, on Route 21, Section 1B, City of Newark, Essex County. Length 0.557 mile. Estimated:

14,223 sq. yds. Pavement Surface Removal
2,287 tons Pavement, Type FA-BC-2
1,200 lin. ft. Concrete Header
1,440 lin. ft. Type 2 Expansion Joints

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, May 29, 1951, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

COMMONWEALTH OF MASSACHUSETTS, Department of Public Works. NOTICE TO CONTRACTORS: Separate sealed proposals for constructing the Concrete Substructure Framing Facing and Steel and Timber Piles, and Approaches (Contract A); and for constructing the Steel Superstructure with Concrete Deck and a Bascule Draw with Open Grid Deck (Contract B); of the MERIDIAN STREET BRIDGE across the Chelsea River between the Cities of BOSTON and CHELSEA will be received at Room 427, 100 Nashua Street, Boston, Mass., until 12 o'clock noon (DST) of Tuesday, June 5, 1951 and at that place and time publicly opened and read. Charge for one set of plans (applicable to both contracts) and proposal form for one contract: $10.00, amount returnable only to bidders who return plans in good condition within three days after opening of bids. Additional proposal forms for either of the contracts may be had upon payment of $5.00 for each proposal, which amount will be refunded if such proposal is used for the purpose of submitting a formal bid. Proposal guaranty: $50,000 for Contract A, $50,000 for Contract B. Minimum wage rates have been established. Complete information at office of Department. Right reserved to waive any informality in or reject any or all proposals. An award will not be made to a Contractor who is not equipped to undertake and complete the work.

By: WILLIAM F. CALLAHAN
Commissioner of Public Works.

May 8, 1951.

Bids: June 14, 1951

Additional Water Supply

FOR
LATHAM WATER DISTRICT, COLONIE, NEW YORK

Sealed bids will be received by the Town Board of the Town of Colonie, New York, on the 14th day of June, 1951, for furnishing all labor, materials and equipment and constructing complete, a filter plant, aerator, pumping station and filtered water reservoir together with furnishing cast iron pipe, cast iron specials, valves and miscellaneous equipment for water supply mains and the unloading, hauling and distributing of cast iron pipe, cast iron specials, valves and miscellaneous equipment for the Project for Additional Water Supply from Stony Creek.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications and Performance Bond may be examined at the office of the Town Clerk, Town Hall, Newtonville, New York, and at the office of Keis & Holroyd, 257 Broadway, Troy, New York. Copies thereof may be obtained at the office of Keis & Holroyd, or from the Town Clerk, upon payment of $25.00 for each set. Any bidder upon returning such set promptly and in good condition, will be refunded his payment, and any non-bidder also returning such set will be refunded $20.00.

The Town Board of the Town of Colonie, New York, reserves the right to waive any informalities in or to reject any or all bids.

A certified check made payable to the order of the Town of Colonie, in the amount of Five Per Centum (5%) of the bid must be deposited by each bidder with his bid as a guarantee that in case the contract is awarded to him, that he will, within five (5) days thereafter, execute such contract and furnish a satisfactory performance bond. On failure to do so, he shall forfeit the deposit as liquidated damages and acceptance of the bid will be contingent upon the fulfillment of this requirement by the bidder.

The successful bidder will be required to furnish a performance bond satisfactory to the Town of Colonie, New York, in the amount of the contract, and having as surety thereon, such surety company or companies as are acceptable to the Town of Colonie, New York.

The work will be let in separate contracts as follows:

Section No. 4A—Furnishing Cast Iron Pipe and Cast Iron Specials.
Section No. 4B—Furnishing Valves.
Section No. 4C—Furnishing Miscellaneous Equipment.
Section No. 5—General Construction on Filter Plant, Aerator and Filtered Water Reservoir.
Section No. 6—Filter Plant Equipment, Furnishing and Installing.
Section No. 7—Plumbing at Proposed Filter Plant.
Section No. 8—Heating at proposed filter plant.
Section No. 9—Electrical at Proposed Filter Plant.

No bidder may withdraw his bid within 30 days after the date set for the opening thereof. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof.

WILLIAM K. SANFORD, Supervisor
Keis & Holroyd Consulting Engineers
Troy, New York May 3, 1951

Bids: June 11, 1951

Earth-Fill Dam

NEW HOLLAND BOROUGH AUTHORITY
NEW HOLLAND, PENNSYLVANIA

Sealed proposals for the construction of an earth-fill dam on Mill Creek, adjacent to New Holland, Lancaster County, Pennsylvania, will be received by the New Holland Borough Authority until 8:00 P.M., D.D.S.T., Monday, June 11, 1951, at which time the bids will be publicly opened and immediately read in a meeting of the Authority to be held at the Liberty Fire Company Hall in the Borough of New Holland, Pennsylvania.

Specifications, Proposal Forms, Drawings, and other contract documents, may be examined at the office of the New Holland Borough Authority or at the office of Glace and Glace, Consulting Engineers, Harrisburg, Pennsylvania. A complete set of bidding documents may be obtained at either office upon depositing $25.00. This full amount will be refunded if a bid is submitted and if the documents are returned in good condition within 10 days after the opening of bids. If the documents are not returned within this period, the deposit will be forfeited. No deposit will be returned to non-bidders.

No bid will be considered unless it is accompanied by the bidder's certified check drawn upon a solvent bank and made payable to the order of the New Holland Borough Authority for the sum of $10,000.00, which will serve as a bid security and will be forfeited to the Authority as liquidated damages in the event an award is made and the contract and bonds are not promptly and properly executed as required in the specifications.

No bidder may withdraw his bid within thirty days after the actual date of the opening.

The Authority reserves the right to reject any or all bids, to waive any technical defects, and to accept any bid that it may deem to be for the best interests of the Authority.

BY ORDER OF THE NEW HOLLAND BOROUGH AUTHORITY
Secretary of the Authority

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3391) will be received by the Bureau of Reclamation, Denver, Colorado, until May 31, 1951, and then publicly opened for furnishing double-circuit steel towers for Oahe-Ft. Randall-Sioux City 230-kilovolt transmission lines, Transmission Division, South Dakota, Missouri River Basin Project. Delivery is desired within 600 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colo.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3394) will be received by Bureau of Reclamation, Grand Lake, Colorado, until June 7, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of Willow Creek Pumping Plant and Willow Creek Canal. The work is situated approximately 8 miles northeast of Granby, Colorado. Principal items are approximately: 160,000 cu. yds., excavation; 320,000 lbs., reinforcement bars; 3,600 cu. yds., concrete; 500,000 lbs., metalwork; and other work. The work is divided into 3 schedules. Time allowed for completion will be 645 days. For particulars, address Bureau of Reclamation, Grand Lake, Colorado; or Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3408) will be received by Bureau of Reclamation, Bismarck, North Dakota, until June 12, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of the Bismarck-Mobridge-Oahe 230-kilovolt transmission line, Transmission Division, North Dakota-South Dakota, Missouri River Basin Project. The work is situated between Bismarck, North Dakota, and Oahe, South Dakota. The line will be 230-kilovolt, 3-phase, single-circuit, steel-tower, using ACSR conductor and galvanized-steel overhead ground wires, and approximately 167 miles long. The Bismarck-Mobridge section will be approximately 94 miles long and the Mobridge-Oahe section, approximately 73 miles. All materials to be furnished by the contractor, except steel for towers, bird guards and pans, and stub angles for footings. Time allowed for completion will be 853 days for erecting steel towers and 1,217 days for stringing conductors and overhead ground wires. For particulars, address Bureau of Reclamation, Bismarck, North Dakota; or Building 1-A, Denver Federal Center, Denver, Colorado.

GOVERNMENT OF THE DISTRICT OF COLUMBIA, DIRECTOR OF SANITARY ENGINEERING, D. C., May 17, 1951. SEALED PROPOSALS will be received in Room 509, District Building, 14th and 'E' Streets, N. W., Washington 4, D. C., until 2:00 P.M., DAYLIGHT SAVING TIME, June 5, 1951, and then publicly opened and read for the construction of OUTLET STRUCTURE AND SECTION 1 OF EAST TRUNK, PINEY BRANCH TRUNK SEWER, vicinity of 16th Street and Piney Branch Parkway, N. W. This project consists of the following: 230 linear feet open channel outlet structure, junction and transition sections; 675 linear feet 18'0" x 10'0" concrete and brick masonry sewer; 100 linear feet 10'0" x 6'0" concrete and brick masonry sewer; 275 linear feet 9'9" diameter concrete and brick masonry sewer; 150 linear feet 4'0" diameter concrete and brick masonry sewer; and 110 linear feet 12" diameter terra cotta pipe sewer. These quantities include approximately 20,000 cubic yards of unclassified excavation, 5,100 cubic yards of reinforced concrete masonry and 300 cubic yards of brick masonry. Proposal forms, drawings and specifications may be obtained in the office of Chief Clerk, E. D., Room 427, District Building, upon the deposit of a certified check in the amount of Twenty-five ($25.00), made payable to the Collector of Taxes, D. C. (Telephone National 6000, Extension 2378)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3420) will be received by the Bureau of Reclamation, Denver, Colorado, until June 12, 1951, and then publicly opened for furnishing 3 motor-operated radial-gate hoists and one lot of wire rope, sheaves, sheave supports and accessories, for Frenchman-Cambridge Unit, Nebraska, Missouri River Basin Project. Delivery is desired within 365 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
EMPLOYMENT WANTED & INDIVIDUAL SELLING OPPORTUNITY undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.25 a line an insertion.

INFORMATION.
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $14.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured 7/8 inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS received by May 18th at the New York Office, 330 W. 42 St., N. Y. 18, will appear in May 31st issue subject to space available.

ENGINEERS WANTED

The Tennessee Valley Authority wants Civil, Structural, Mechanical, Electrical and Office Engineers. The work is design and construction of large steam-electric and hydroelectric projects and transmission systems. Salaries start at $3200, $3900 and $4650 for 40-hour week. Some work is scheduled more than 40 hours and pays overtime. All jobs carry automatic within-grade increases for satisfactory service, liberal vacation leave (26 days), sick leave and retirement benefits. Design jobs are in Knoxville and Chattanooga, Tennessee. Field and office engineer jobs are at construction sites in the Tennessee Valley area and at Paducah, Kentucky. Write the Tennessee Valley Authority, Division of Personnel, Knoxville, Tennessee.

WANTED
SALES ENGINEER
Or trainee for construction equipment business in St. Louis. Prefer young or middle-aged man interested in selling and buying, mostly by correspondence, preferably with some civil and/or mechanical engineering education. Reply in detail outlining education and background.
P-9805, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ESTIMATING ENGINEER
On staff of Plant Engr., large food processing plant in Chicago. Prepare estimates, plan and supervise constr. engrg. asgmts. Must have constr. engrg. exper. Struc. engrg. training desirable.
P-9780, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

To EMPLOYERS Who Advertise for MEN:

Frequently, when there are many applicants for a position, only the most promising letters are acknowledged. The other applicants never know whether their letters reached a prospective employer or not. These men often become discouraged, will not respond to future advertisements and even question their bona fide character.

Every Advertisement Printed in the Searchlight Section Is Duly Authorized. You can help keep our readers interested and get better returns to your advertising in this section if you acknowledge each reply—in plain envelopes, if you wish.

Classified Advertising Division
McGRAW HILL PUBLISHING CO., INC.
"Put Yourself in his place."

HELP WANTED

P-9744, Engineering News-Record

We need a top notch man to take charge of gasoline and diesel engine rebuilding shop of twenty men.
Machinist or mechanical engineer with proven record of supervision and reliability, completely familiar with all precision equipment, such as crank-grinders, line boring, fitting, assembly and final test.
We'll pay top money for man that can run the job efficiently and profitably. Location eastern Pennsylvania. Detail experience, background and age in reply. State availability.
330 W. 42 St., New York 18, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

CIVIL SERVICE

CIVIL-SANITARY Engineers. Several positions open about June 1, 1951. For design of sewers and sewage treatment plants in connection with master planning for Cleveland metropolitan area. Excellent opportunities and possibilities of permanent employment. Please give resume of education, experience, salary requirements and data available in reply. P-9783, Engineering News-Record.

POSITIONS VACANT

DETAILER AND Checker—Experienced in making and checking shop details for steel-fabrication plant. All types of steel construction. State experience, references, and rate expected. Savannah Machine and Foundry Company, P. O. Box 590, Savannah, Ga.

WANTED MECHANICAL Engineer, age 35-50, should have had at least ten years experience in material handling, preferably in hoist equipment field. Also should have supervisory ability. Write full qualifications and salary requirements. P-9765, Engineering News-Record.

OFFICE MANAGER capable of handling all problems of large field office on force account type of construction projects. P-9676, Engineering News-Record.

CIVIL ENGINEER one to two years field layout experience desired. Must be able to read plans and take off quantities. This is an opportunity to connect with a progressive and growing concern. Give full details concerning age, education and experience in letter. Location usually in Eastern States. P-9657, Engineering News-Record.

BRIDGE DESIGNERS and Draftsmen. Good pay for qualified men. Opportunities for advancement. Pleasant working conditions. Interesting projects. Write stating education and experience or apply in person. D. B. Steinman, Consulting Engineer, 117 Liberty St., New York 6, N. Y.

CIVIL ENGINEERING Technicians: Laboratory and field men experienced in soils, concrete and asphalt. Drillers, soil borings and diamond drilling; locations, East, Midwest and South. Furnish complete information including age, education, experience. Toledo Testing Laboratory, Toledo, Ohio.

WANTED—ESTIMATOR for General Construction firm located in the upper Middle-West area. Must be experienced in industrial and commercial construction work. State qualifications and pertinent data including salary expected. P-9767, Engineering News-Record.

STRUCTURAL DRAFTSMEN WANTED
For detailing and checking. Prefer men with 3 to 5 years experience with companies which fabricate structural steel. Write or apply in person.
DRESSER EQUIPMENT CO.
Ideco Division
875 Michigan Avenue, Columbus, Ohio

WANTED
BRIDGE DESIGNERS
DESIGNER DRAFTSMEN
RESIDENT HIGHWAY ENGINEERS
Experienced men wanted. State qualifications, age, salary and date available in first letter. Location, Western Pennsylvania.
P-9592, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

POSITIONS VACANT

ESTIMATOR WANTED—A thoroughly established general contractor is looking for an estimator. The work is chiefly building construction including factories, commercial buildings, schools, etc. Write giving full education and experience. Also give references. A snapshot will be helpful. Location—Western New York. P-9794, Engineering News-Record.

FIELD SUPERINTENDENT. Immediate employment. Capable of assuming full responsibility for the performance of the work. Substructure for 7-span bridge over Lake Champlain involving cofferdams up to 70' deep. Submit qualifications and expected salary. P-9768, Engineering News-Record.

GENERAL FOREMAN, for bridge project in Northern New England involving deep water open cofferdams, underwater forms, etc. Open shop. Immediate opening. Long hours when necessary. Telephone Vincent J. Marino, North Hero, Vt. 371-M4.

DESIGNERS, ENGINEERING Draftsmen for established consulting firm designing sewers, pumping stations, sewage treatment plants, water supply systems, etc. Layout and detail drafting on structures, piping, reinforced concrete. Structural and hydraulic computations, specifications. Give full particulars. Location, New York State. Our employees know of this advertisement. P-9755, Engineering News-Record.

WANTED—HEAVY Duty Equipment Mechanic. Users of Intoxicants need not apply. Guaranteed $4,000.00 per year. Paid vacation. Must be A.1. No traveling. Regular hours. P-9766, Engineering News-Record.

ENGINEER-SEWERAGE & Industrial Wastes Engineer with design and/or operating experience. Special Opportunity. Location N. Y. or Trenton, N. J. Immediate opening. P-9765, Engineering News-Record.

(Continued on page 94)

Additional Position Vacant Advertisements on pages 94, 95 and 96

POSITIONS VACANT
(Continued from page 93)

MECHANICAL CONTRACTOR wants Sales Engineer—Mechanical contractor operating in south-eastern United States is in need of a Sales Engineer who is best qualified to consult with architects, engineers, contractors, suppliers and owners, particularly in reference to plumbing, heating, air conditioning and process piping. If you are looking for a future and good opportunity with one of the oldest and most reliable mechanical contractors in the south, handling well over a million dollars annual volume, please write: Mechanical Contractor, P. O. Box 38, Miami 38, Florida, giving personal history, education, previous and present employment and experience, references and additional information or remarks. All replies will be kept strictly confidential and present employees of the company know of the opening.

TWO HIGHWAY Engineers wanted, experienced in surveys, design, and preparation of plans. State qualifications, availability and Military Status. Write Box 351, New Philadelphia, Ohio. Phone 42364.

ENGINEER WANTED: Experienced in concrete and hydraulic design, preparation of plans of Water Works and Sewage Treatment Plants. State qualifications, salary wanted, references, availability and Military status. Work in Birmingham, Alabama. Old established Engineering Firm. Polglaze & Rasenberg, Engineers, 812 South 27th Street, Birmingham, Alabama.

WANTED: SUPERINTENDENT experienced in charge of construction of sewers, highways, bridges and other heavy construction. Excellent opportunity of managerial position in future. Work in New England. State qualifications and salary desired. P-9774, Engineering News-Record.

STRUCTURAL DESIGNERS: 5-10 yrs. exp. in reinforced concrete & structural steel design. Exp. on water works projects desirable but not essential. Permanent. Salary commensurate with exp. Employee benefits. Retirement plan. Location—Philadelphia. Submit exp., salary requirements & availability in first letter. P-9790, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

WANTED CONCRETE Engineer with sales experience and car. Position requires travel in Western States good part of time. Salary, expenses and bonus. State full experience, qualifications and salary expected and enclose recent picture. Prominent Southern California firm over 20 years. SW-9778, Engineering News-Record.

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven.

POSITIONS WANTED

BUILDING CONSTRUCTION Superintendent or General Superintendent 25 years experience. Thoroughly familiar with all types of Building Construction. References. E. Harold Bowen, 2450 NW 79th Street, Miami 38, Florida.

CONSTRUCTION EXECUTIVE 50. Capable of managing an entire business. Thoroughly experienced with buildings, machinery installation, process piping and heavy construction projects. Actual superintendent and project manager background on large jobs. PW-9580, Engineering News-Record.

REGISTERED ENGINEER, experienced, Masters Degree, desires position in hydraulic-hydrologic field. Eastern states or foreign. PW-9775, Engineering News-Record.

ENGINEER GRADUATE C.E., 15 years experience, and registered. Desires position on the design of reinforced concrete, foundations, and structural steel. Prefer New Jersey or New York City location. PW-9667, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT and Engineer desires work in New England. Experienced industrial plants, housing, roads, sewers, docks, bridges. Skilled estimator. PW-9775, Engineering News-Record.

CIVIL ENGINEER AVAILABLE
Assoc. M. A.S.C.E.—Reg. P.E. & Land Surveyor N. Y.

13 years experience Highway design and construction in charge of all construction for 2 counties. 25 years experience Road Building Contractor. Dredging Contractor & Consultant. Desires association with Contractor or with Engineer Consultant. Prefer Metropolitan N. Y. *Apply*

L. I. DREDGING CO.
171-18 Liberty Ave., Jamaica, N. Y.

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FOR FORTY YEARS our courses have helped thousands to better positions and to pass State Board Examinations.

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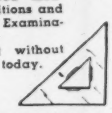

WILSON ENGINEERING CORP.
College House Offices - Dept. E.
Harvard Sq. Cambridge, Mass.

POSITIONS WANTED

CONSTRUCTION EXECUTIVE: Engineer: 15 years const. experience large industrial plants, gas compressor stations, hydro-electric projects, industrial water supply systems. Excellent administrator and contact man. Salary $10,000. PW-9699, Engineering News-Record.

GRADUATE-CIVIL: M.S. in structures, age 27, veteran, non-reservist, 2 years general experience: building construction, cost estimation, hydrology and hydraulics. Desires position with structural engineering firm along the eastern seaboard. PW-9798, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, concrete pipe manufacture, considerable experience, machine and cast pipe. PW-9733, Engineering News-Record.

CIVIL ENGINEER, age 38, Married. B.S. now completing M.S. hydraulic engineering major, 10 years experience water power and flood control, 2 years college instructor, Assoc. A.S.C.E. PW-9761, Engineering News-Record.

ESTIMATOR: HEATING and Process Piping. Experience Steam and Hot Water Heating. Can detail and supervise work. Have done large Government Jobs. Want connection with Mechanical Contractor. PW-9777, Engineering News-Record.

BUSINESS MANAGER. Will take complete charge of Contractor's office. Can handle new business, estimating, purchasing, supervision of field work. 25 years experience. Any location. PW-9785, Engineering News-Record.

ARCHITECT'S OR Engineer's Supt. desires employment where responsibility, mature judgment and experience merit compensating salary. A-1 Reference. Eastern states. PW-9786, Engineering News-Record.

CONTRACTOR'S SUPT. experienced on building and utilities construction available at once. Prefer western New York. A-1 reference. PW-9787, Engineering News-Record.

BUSINESS OPPORTUNITIES

For Sale:

Civil Engineering & Surveying Business in growing industrial community in central New York. Write John D. White, broker, Paul Bldg., Utica 2, N. Y.

Professional Engineer

in early thirties seeks active and financial participation with established construction company. Can offer contacts, capital and experience. BO-9788, Engineering News-Record.

SPECIAL SERVICE

Right of Way

Clearing Wanted. By Contract. Will furnish men and equipment. Joe Ralick, Box 186, James City, Pa.

WANTED

ANYTHING within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

WORK WANTED
STRUCTURAL & MECHANICAL DESIGN
Licensed Engineers Professional and Structural—20 Years Experience in Design of Steel Structures and Machinery.
STEEL STRUCTURES INC.
5900 S. Ashland Ave. Chicago 36, Ill.
Phone-Walbrook 5-1750

ESTIMATING SERVICE

Any Trade and Type of Project
Literature and Sample on request
Construction Survey Cooperative
101 Park Ave., New York 17, N. Y.
MUrray Hill 5-7317 Founded 1922

Building Construction Cost Data

1951 (9th) Edition

A 98-page booklet of tabulated construction costs revised as of January 1951. 1600 average spot prices alphabetically arranged and broken down for labor and material, plus 110 explanatory paragraphs. Concise, Comprehensive, *Up-to-date, Handy.* $2.75 Postpaid.

R. S. MEANS
P. O. Box 62N Duxbury, Mass.

FOR RENT

FOR RENT
MANITOWOC SPEEDCRANES

Late model combination shovels, cranes & draglines. 1¼ to 2½ cu. yd. capacities, 25 to 60 ton lifting capacities, 60 to 80 ft. booms, Diesel powered, complete with light-plants.

Special rates on long-term rentals

McCARRICK BROS.
1700 E. Ridge Pike Norristown, Pa.
Box 291 Tel. Norristown 4231

FOR RENT

- 24 truck and tractor cranes
- Booms to 150'
- Special terms for long term rentals
- Derricks, hoists, and compressors.

KOCH
362 Casanova St., Bronx 59, N. Y.
Kilpatrick 2-3800

FOR RENT
NEW AND ALMOST NEW
MANITOWOC SPEEDCRANES
2½ Cu. Yd.—60 TON CAPACITY
Clemens Construction Company
P. O. Box 266 West New York, N. J.

FOR RENT

One ten ton Moto Crane, Four winch trucks with Tulsa 34 winches, One ten ton 28½' trailer, One 1950 Ford pickup. Equipment in Excellent condition. Special rate if all taken on same job.

FR-9612, Engineering News-Record
68 Post St., San Francisco 4, Calif.

For rent on long time lease
80D Northwest Dragline and Crane combination
New machine available in approximately 30 days.
Telephone 8-0194, at
447 Ins. Exch. Bldg., Des Moines, Iowa

ENGINEERS

STRUCTURAL **PIPING**
ELECTRICAL **MECHANICAL**

Southern California

Our expanding workload presents many opportunities for advancement in a company with over 40 years' experience. Positions are open in the engineering and design of complete oil-refineries and chemical-plants.

Please send a detailed summary of your education, experience, and personal history to our Personnel Department. Also include a recent photo. All replies will be kept confidential.

C F BRAUN & CO
Engineers Fabricators Constructors Consultants
1000 South Fremont Avenue Alhambra, California

CONSTRUCTION SUPERINTENDENT

Experienced in construction of Blast Furnaces. Must be a good organizer, able to handle labor and qualified to exercise executive ability. Compensation commensurate with ability of individual.

Write and furnish full information regarding education, training, chronological details of experience, age, salary expected, etc. All replies will be considered strictly confidential.

P-9734, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

CONSTRUCTION SUPERINTENDENT & ENGINEER

Preferably a technical college graduate experienced in building construction and equipment installation. Experience in chemical plants beneficial. Willing to travel in Continental U. S., usually near a large industrial center. To obtain more than casual consideration your letter must give full details of experience, age, salary expected and when available. No contacts will be made with present employer without applicant's consent. **Write Box ENR 1178, 221 W. 41 St., N.Y. 18, N.Y.**

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Electrical, Mechanical
Structural & Hydraulic

Reinforced Concrete
Designers & Detailers

DEFENSE WORK OF HIGH PRIORITY

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DESIGNERS

We pay among the highest rates in the industry
Our employees share annually in company profits

Must be willing to relocate in Cleveland

Permanent employment

Our continuous expansion and growth offers many fine future opportunities.

We need Designers experienced in Blast Furnace, Steel Mill or Oil Refinery Design.

Men with specific experience, training and background in the following classifications:

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CONCRETE DESIGNERS
ELECTRICAL DESIGNERS
ENGINEERING DESIGNERS
CHECKERS

Our working conditions are the best: our offices are air-conditioned and well-lighted.

We want men who have a genuine desire to develop and advance.

Write to

ARTHUR G. McKEE & COMPANY

2300 Chester Avenue — Cleveland 1, Ohio

ENGINEERS

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P-9609, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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P-9736, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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P-9735, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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P-9537, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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330 W. 42 St., New York 18, N. Y.

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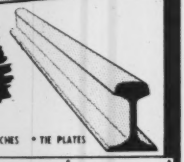

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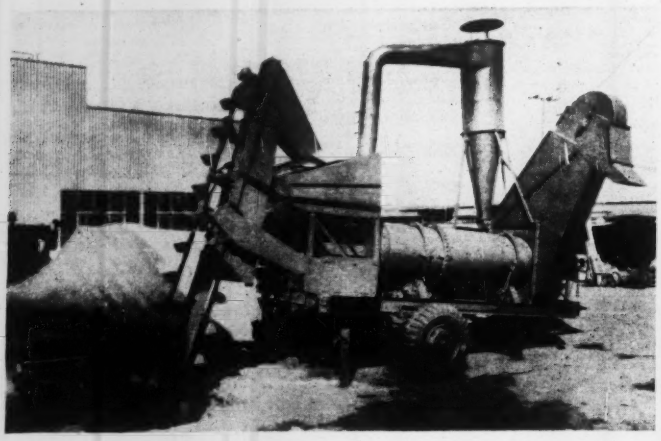


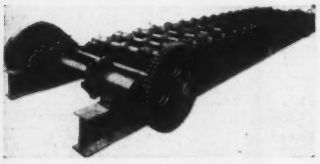
Mobile aggregate dryer for black-top paving

Portable aggregate dryer is easily moved from job to job. Main dryer drum, motor, and frame are pulled as a trailer behind a regular truck; discharge elevator folds over after the spout is removed; and the feeder apparatus, duct work, and cyclone are carried by the main truck.

Sequence of operations is this: A shallow hole is dug at the feed end to accommodate the foot of the elevator. Aggregates go through the feeder and are raised by an elevator to a hopper above the dryer. From the hopper, they are gravity fed into the revolving drum of the dryer. Drum is heated by same fuel used to drive the 35-bhp engine. At discharge end, aggregate is picked up by an elevator and carried to the discharge spout. A cyclone separates and returns dust from the hot-air discharge.—STANDARD STEEL CORP., 5001 BOYLE AVE., LOS ANGELES 58, CALIF.

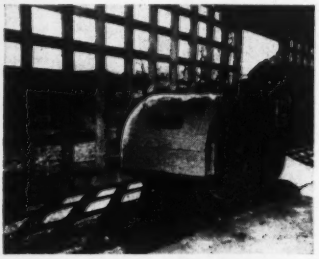
Boom jumbo drilling rig

Standard rig is designed for high-speed driving of drifts, cross-cuts, and tunnels. It can work in an opening with a maximum height of 10 ft and a width of 12 ft. Booms can be purchased separately for mounting on jumbos for large tunnels. Booms are set in drilling position by I-R air motors, relieving operator of all manual lifting. Self-locking worm gear operates screw drive for raising or lowering booms, providing double insurance against boom creeping or settling. Two ceiling jacks (total rating of 32-tons pressure) hold jumbo in drilling position regardless of overbreaks or high ceilings. An optional hydraulic ceiling jack is available.—INGERSOLL-RAND CO., DEPT. RD, 11 BROADWAY, NEW YORK 4, N. Y.



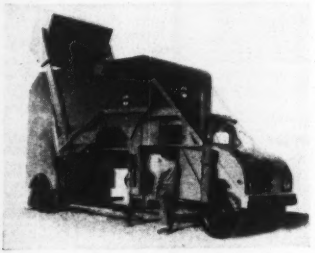
Pan-feeder lubricator

Two new lubricating systems are available for Pioneer-Oro heavy-duty manganese-steel pan feeders. Both systems employ tubing to all bearings for distribution of the lubricant. In one system, tubing is brought out to one side of the feeder, and each bearing is individually lubricated through Alemite fittings. In the other system, tubing is brought out to one side, and all tubes terminate in a central system, whereby all bearings are lubricated simultaneously from a pressure tank.—PIONEER ENGINEERING WORKS, INC., 1515 CENTRAL AVE., MINNEAPOLIS 13, MINN.



Variable-weight roller

Tandem 3 to 5-ton roller features: Hydraulic steering, rugged spurgear final drive, and constant-mesh transmission. A transport towing attachment available for use with this unit raises the roller from the ground so that it rides along on a set of auxiliary wheels equipped with heavy-duty pneumatic tires. Compression roll has a 48-in. dia, and is 42-in. wide. The 2-section steering roll has a 30-in. dia, and is 40-in. wide. Rolls are fitted with mats and sprinkler system. Power is provided by a 25-hp gasoline engine.—THE GALION IRON WORKS & MFG. CO., GALION, OHIO.



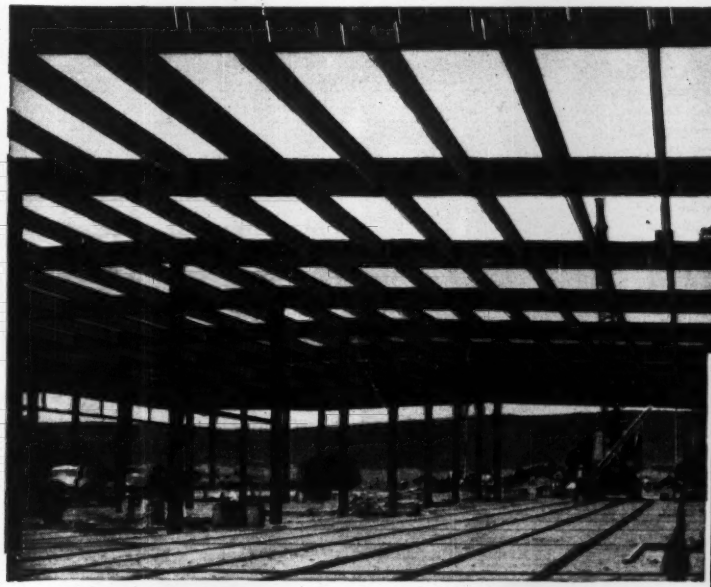
Mobile weigh-batcher

Portable Mixermobile unit weigh-batches aggregate on the job. It can be charged with a Scoopmobile from storage piles, or directly from dump trucks. Three 7-yd bins and a 2-yd skip store up to 23 yr of aggregate. One operator handles the Weigh-Batcher. Set-up time is 15 min. The unit is mounted on 3:25x20 tires and travels at normal highway speeds. It is gasoline powered. Total weight is 17,800 lb. The Weigh-Batcher is 12

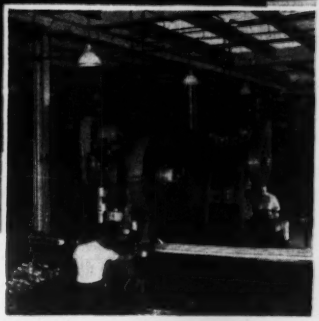
(*Continued on page 106*)

Scranton, Pa., Builds for the Future with LIGHT-WEIGHT EASY TO INSTALL J & L JUNIOR BEAMS

J&L STEEL



A typical example of steel framework in one of the LIFE plant buildings. Junior Beams contribute vitally to the ease and speed of construction.



Interior view of completed plant occupied by the Eastern Mfg. Div., The Trane Co., showing Junior Beam roof purlins in the economical ceiling construction.

JUNIOR BEAM ROOF PURLINS SAVE TIME AND MONEY IN CITY'S PLANT CONSTRUCTION PROGRAM

The citizens in the area of Scranton, Pa., have embarked on a farsighted program of industrial plant construction. They call it Lackawanna (County) Industrial Fund Enterprise—LIFE. Its aim is to attract new industries which will provide the district's unemployed with sorely-needed jobs.

Early in the program, the Anthracite Bridge Company, Scranton, worked out an economical building system which has been used in almost every new plant erected.

J&L Junior Beams play an important role in making this low-cost, speedy construction possible.

For example, in Building No. 1 of LIFE's program light-weight Junior Beams were installed as roof purlins. A five-man crew with a light truck-crane plus another five-man "bolting-up" crew erected the entire steel framework of the 180' x 460' building *in less than 10 days!*

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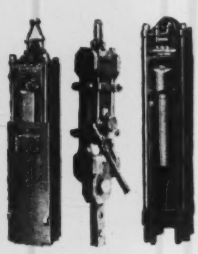

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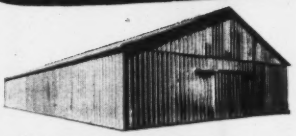

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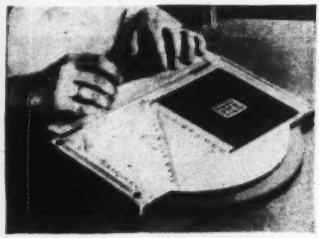
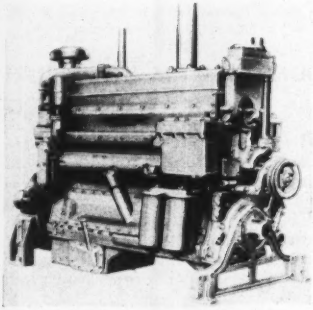
ft high, 8 ft wide, and has an over-all length of 28 ft with the charging skip down. It can be equipped with dial or beam scales.—MIXERMOBILE DISTRIBUTORS, INC., 8027 N. E. KILLINGSWORTH ST., PORTLAND 20, ORE.



Mathematical calculator

Made of Vinylite plastic, the Merrill RMS Slide-Disk desk calculator is said to be accurate to ½%. One operation completes as many as five separate mathematical steps. Squares, sums of squares, and square roots are performed simultaneously. It can be used to determine standard deviations, root-mean-squares, correlation coefficients, geometric and harmonic means, regression lines, and similar functions. Linear and logarithmic scales are furnished with the calculator.—GRAPHIC CALCULATOR CO., 633 PLYMOUTH COURT, CHICAGO 5, ILL.

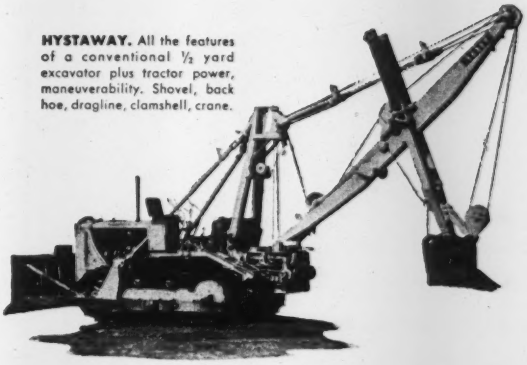


Industrial diesels

Two Caterpillar industrial diesel engines are scheduled for mid-year production. The 6-cyl D337 is an industrial version of the engine used as a power source for the DW20 and DW21 tractors. The D326 is similar in design, but will be offered with a lower horsepower range. Fuel system has the fuel pump mounted adjacent to the cylinder it serves, resulting in short fuel lines for each cylinder. Pistons are cooled by an oil stream sprayed from a nozzle solidly attached to the engine block. Since this spray

(*Continued on page 109*)

29 HYSTER TRACTOR TOOLS



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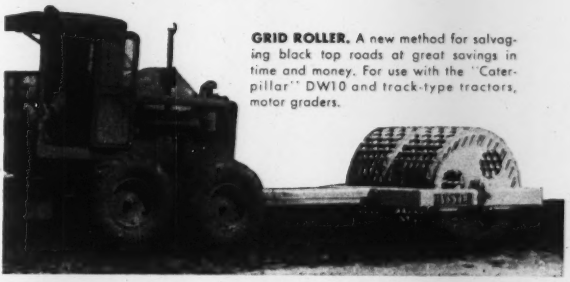

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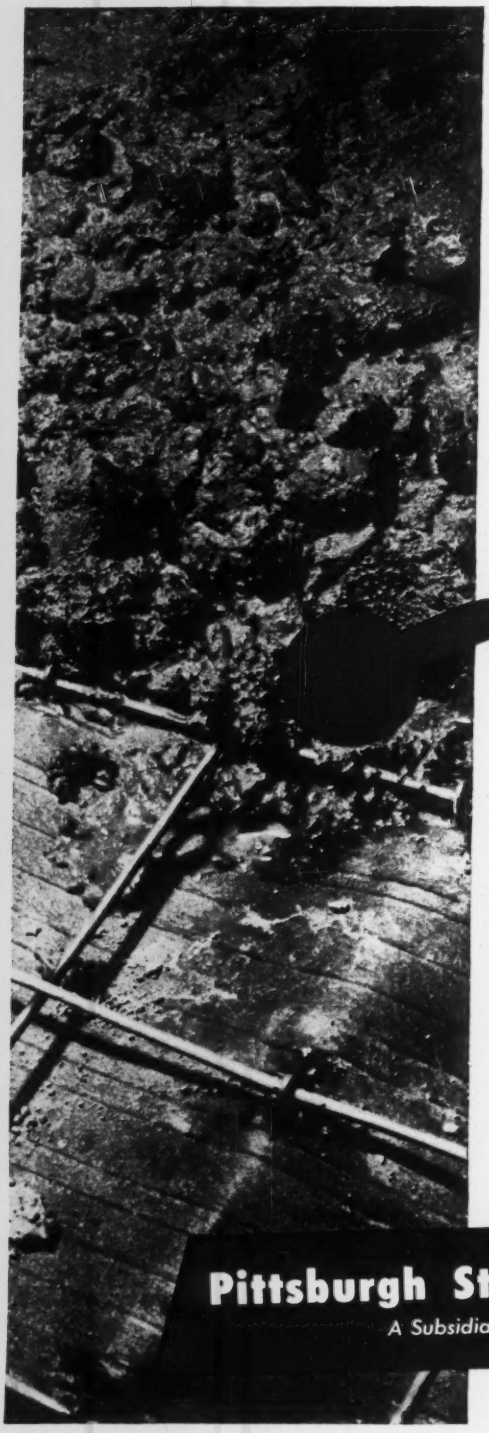

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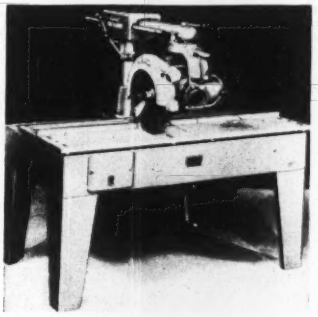
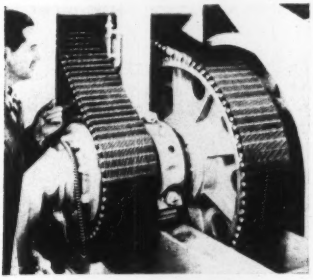
lubricates the pin also, oil grooves are not required in the connecting rod. Fine-filtration elements that handle full flow of oil to the engine system are incorporated. Oil passageways are thus protected from dirt and foreign material while filter elements are being changed. Range of the D337 varies from 170 to 275 hp; of the D326, from 118 to 186 hp.—CATERPILLAR TRACTOR CO., PEORIA 8, ILL.



Radial saw

Model 450 saw handles all types of cuts—bevel, rip, dado, plough, and rabbet. It is available with manual or magnetic controls. Special stops automatically set saw to common cutting angles. All changes and adjustments are made from one place. The saw is available in a variety of voltage, hp, and motor cycle specifications with either 14, or 16-in. blades. Floor-space requirements are 4½x6 ft. Weight is 475 lb.—SKILLSAW, INC., 5033 ELSTON AVE., CHICAGO 30, ILL.



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(Continued on next page)

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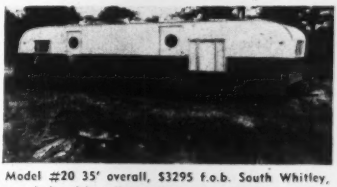

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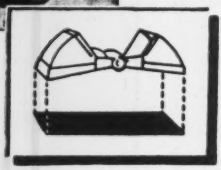

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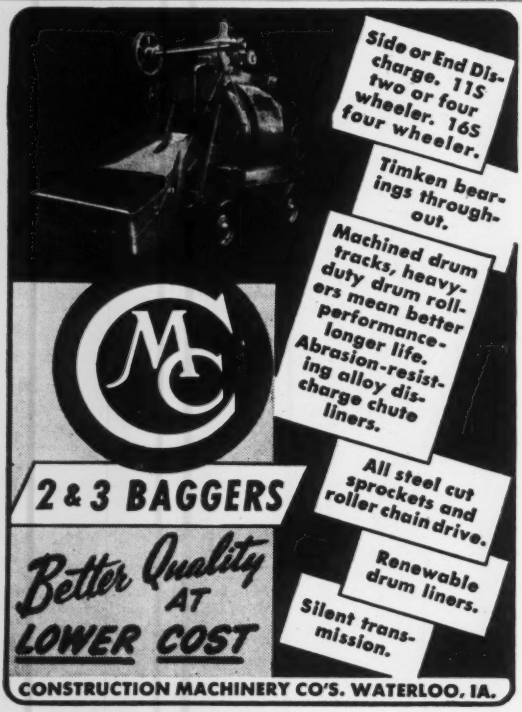
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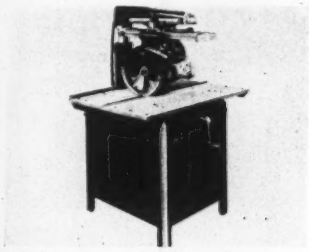
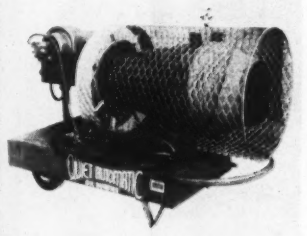


Radial-arm saw

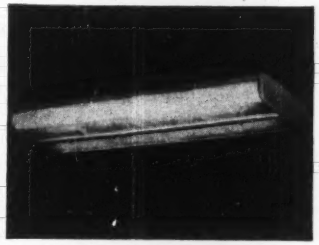
Model 40-B saw has sufficient capacity to make cuts across the board at any angle from 0 to 90 deg, right and left—above the working table. Double 360-deg radial action permits adjusting saw to the lumber. The 40-B is available in three types—portable, with hand grips; mobile, mounted on rubber-tired trailer; and stationary, mounted on a cabinet-type base. All three are available in several sizes—½ to 5 hp, 1-phase ac; and ¾ to 7½ hp, 3-phase ac.—DELTA POWER TOOL DIV., ROCKWELL MFG. CO., 600 E. VIENNA AVE., MILWAUKEE 1, WIS.



Radiant-type space heater

Portable, automatic heater is recommended for outside or for inside construction work, for space heating, drying plaster, and similar applications. Air is forced through the gun of the automatic oil burner by a motor-driven axial blower. As air leaves the gun, it is split so part moves over the outside of the combustion chamber. (The other is used at the nozzle for

combustion.) The heater burns No. 2 fuel oil, and is rated 200,000 btu. Power is provided by a 110-v current. Over-all dimensions are 4x2x3 ft.—QUIET AUTOMATIC OIL BURNER CORP., 33 BLOOMFIELD AVE., NEWARK 4, N. J.



Shallow luminaires

Surface-attached Holoflux luminaires feature extreme shallowness (4½ in.) to simulate recessed construction without roughing-in. Other features of the 9300 series are low brightness, high output, easy and continuous installation, and minimum depreciation. There is brightness control both across and along the axis of the lamps. The 9300 can take 2 or 4 fluorescent lamps of conventional bipin type or the instant-start single-pin type (both 4 and 8 ft.)—HOLOPHANE CO., INC., 342 MADISON AVE., NEW YORK 17, N. Y.

New Product Briefs

Measuring tapes made by the Master Rule Co. now have a decimal equivalent chart imprinted on the back.

Transmissions are available for use with single-drum, double-drum, or two separate winches. They provide rapid forward and reverse. Made by: Tel-E-Lect Products, Inc., Minneapolis 16, Minn.

Air conditioning compressors of the reciprocating type feature quiet operation and low maintenance cost. The Trane compressors are built in 10, 15, 20, 25, 40, and 50-ton capacities.

Plug-in circuit breaker features quick-make, quick-break operation and thermal-magnetic protection. Made by: Trumbull Electric Mfg. Co., Plainville, Conn.

Boom extension (12 in.) increases load travel of the Unit utility hoist (Unit Mfg. Co., Minneapolis 3, Minn.) from 77½ to 97½ in.

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It's passing — but there was a time when wire rope buying was no "bed of roses". Selecting the right wire rope for scraper, dragline and other of the tougher operations is no longer a complicated job of specifying.

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MANUFACTURERS' PUBLICATIONS

Concrete curbs—Construction of concrete curbs on existing slabs without drilling holes through the pavement is described in a 4-p folder. Bulletin 151 describes and illustrates Pacific clamp set-ups for all standard curb jobs, and also shows special applications. Typical installations are illustrated.—Pacific Engineering Sales Co., 215 W. 5th St., Los Angeles 13, Calif.

Concrete-pipe gaskets—Engineering specifications for Hexseal rubber gaskets for reinforced-concrete sewer pipe are contained in a 4-p brochure. Subjects covered include: Type of pipe, dimensions, pipe design, steel reinforcement, concrete, water curing, steam curing, curing compounds, and curves. A special section discusses installation instruction.—Universal Concrete Pipe Co., 297 High St., Columbus, Ohio.

Liquid level controls—Catalog FA (32 pp) describes floatless liquid-level controls for water works, sewage treatment and disposal, drainage, and hydraulics. The bulletin lists the features of these controls and describes typical applications and the principle of operation. Each of the various controls is described in detail, as are the attachments and accessories for use with them.—Charles F. Warrick Co., 16251 Hamilton Ave., Detroit 3, Mich.

Lightweight aggregate—Properties and characteristics of lightweight, cellular Waylite aggregate are listed and described in this 16-p catalog. A feature of the catalog is an illustrated description of construction details for all types of buildings. Installation data and pertinent engineering tables are included.—The Waylite Co., 105 W. Madison St., Chicago 2, Ill.

Precision instruments—A complete line of instruments for engineers and surveyors is listed in Bulletin 1051. A special feature of this new bulletin is a description of the advantages of coated lenses. A complete description is given for each instrument and accessory in the line.—David White Co., 315 W. Court St., Milwaukee 12, Wis.

Elevated-tank controls—Pressure-operated pump controls for elevated tank systems with two or more pumps are described in Bulletin 1210. Fea-

(*Continued on page 115*)

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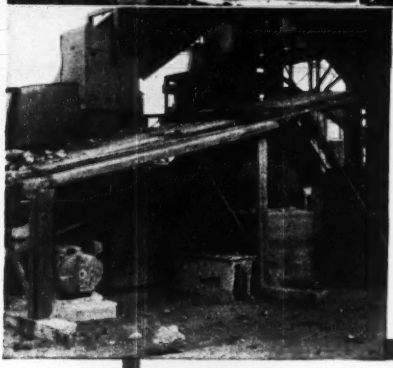
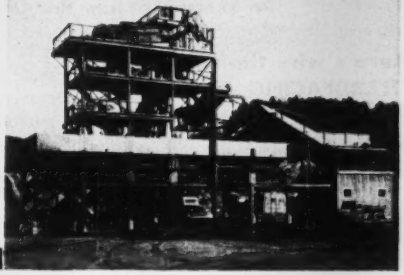


Primary Breaker is a 10-B Telsmith Gyratory Crusher followed by 36" Style S Gyrasphere Crusher

Telsmith Washing Screen, Twin Screw Sand Classifier, and Sand Drag



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Six sizes—two of sand and four of gravel—all meeting the State of Massachusetts Highway Specifications are produced by this modern aggregate plant owned and operated by the General Stone and Sand Corp., of Pittsfield, Mass.

Entirely designed and completely equipped by Telsmith engineers, the plant's planned capacity was 100 tons per hr., but it is regularly turning out 25% to 50% more. It ran the entire first season without one shutdown.

Again Telsmith Complete Plant Service proves its time and money-saving advantages; and Telsmith equipment demonstrates its efficiency and extra capacity.

Send for Bulletins 266, 271, and 274

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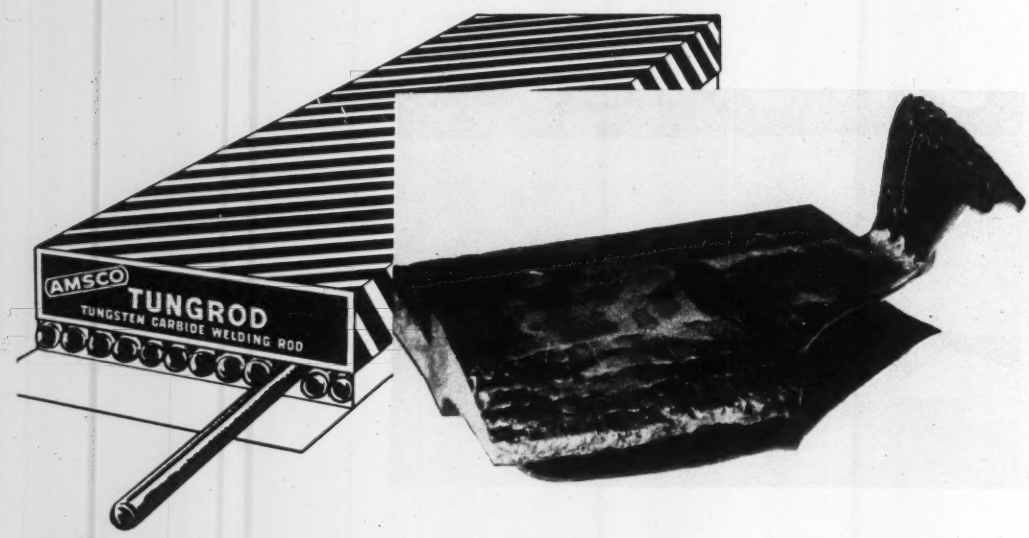

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tured in the bulletin is a description of the Autocon Twin Bellows design, and the advantages claimed for it. A detailed, illustrated description shows the sequence of operation.—AUTOMATIC CONTROL CO., 1005 UNIVERSITY AV., ST. PAUL 4, MINN.

Basic trailer models—A 52-p metal-bound catalog details the 29 basic Fruehaf trailer models. Special features listed include the Multi-Rate single axle and the Gravity-Tandem suspensions and underconstructions. Specifications and features are listed for all models.—FRUEHAF TRAILER CO., 10940 HARPER AVE., DETROIT 32, MICH.

Gratings—Aluminum gratings for flooring, stair treads, bridge decking, walkways, and catwalks are described in this 4-p bulletin. Typical cross-sections, with dimensions, of the various styles in which these gratings are produced are illustrated in the bulletin. Specifications listed cover safe loads, standard panel widths, and standard grating weights.—IRVING SUBWAY GRATING CO., INC., 5063 TWENTY-SEVENTH ST., LONG ISLAND CITY 1, N. Y.

Shoveloader—Bulletin describes applications and advantages of the Lull Shoveloader. It contains an illustrated list of 18 factors to consider in selecting this type of equipment. Also listed are 63 features claimed for the Shoveloader.—LULL MFG. CO., 3612 E. 44TH ST., MINNEAPOLIS 6, MINN.

Magnesia insulation—Model specification covers 85% magnesia insulation for heating systems. Requirements for related materials used are also discussed. Schedules of insulation thicknesses for piping and equipment are listed for temperature ranges up to 600 deg F.—THE MAGNESIA INSULATION MANUFACTURERS ASSN., 1317 F ST., N. W., WASHINGTON 4, D. C.

Subdrainage systems—Folder entitled "How to Stop Excessive Maintenance at the Source" discusses subdrainage systems for streets and roads. It describes lightweight perforated pipe and how it is adapted to this type of service. Installation procedures are listed.—ARMCO DRAINAGE & METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

Correction—In the description of the Lodover underground loader attachment (April 19, p. 99), we listed the manufacturer as the Shovel Supply Corp. The correct name and address should be: Service Supply Corp., 20th & Erie Ave., Philadelphia 32, Pa.

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Do you have DO-itis?

If you're about to shut up shop because of government controls over scarce materials, a DO priority won't be much help. But the mobilizers have a more potent weapon you may not have heard about—something they call "a directive."

There's a big difference between the DO priority and the directive.

A DO priority applied to an order for supplies tells the supplier: This order comes ahead of orders that don't have a DO on them. On the other hand, on most tight materials and components your DO order may take its place behind other DO-orders already on the suppliers books.

But a directive packs a real punch: it is a specific command to a specific company, telling exactly what to do and giving a deadline by which it must be done.

• **Power of the specific**—To the supplier or producer of scarce items, the directive says: "deliver to company specified the following quantities of the specified items by the specified date."

Usually the directive has been applied in emergencies, a one-shot allocation of a scarce material or component to a company that's in a bad way for lack of a scarce item.

But the directive is also a general-purpose tool the National Production Authority can use when it wants something done that cannot be handled any other way.

So far, the mobilizers have been very hush-hush about their use of directives. Last fall they announced in a press release they had allocated some electronic tubes to civilian air lines that otherwise would not have been able to fly some of their planes. But since that time directives have been under wraps.

• **Now you see it now you don't**—Only the *bona-fide* case gets any consideration at all. It does a company no good, for instance, to come in with the strong support of a Democratic Senator. In all cases, the "directive" has to be requested by the appropriate division with NPA. The order goes out over the signature of Manly Fleischmann, NPA chief. This is the report of officials on the job.

But politics lives on. Still the most effective way to get attention from the emergency defense agencies is to have a Senator or Congressman lend his auspices.

In his first report, Charles Wilson, mobilization director, reports that "more than 650" directives had been issued as of the end of March. Some of these directives were issued to authorize the allocations required in the freight car and ore boat building programs.

But, according to NPA officials, at least 450 were one-shot allocations of specific, critically needed items to specific companies.

• **Directive for barbed wire**—Only a few directives have been issued to put hurry on military end-items needed in Korea.

For instance: last fall a number of directives were placed on makers of barbed wire which quickly turned a month's output to Korea.

The Atomic Energy Commission has also been given support with directives for needed valves, motors, electronic gear and other items.

But the vast majority of directives have gone to so-called essential or civilian industries. Here's just a sampling of the way the directives have been used:

Cotton gins—They've been given structural steel ahead of DO orders on steel company books.

Locomotives—Engines coming off the line were directed to Army use, taken away from the companies which had placed the order.

Aluminum—Two million lbs of copper were diverted from a copper consuming company to a new aluminum facility. Result: additional production was brought in three or four months earlier.

Chemicals—One company was given an emergency allocation of a short length of scarce columbium-steel pipe. It's all set aside for military and defense purposes. The company got what it needed by showing that it would have had to close down needed production if it couldn't get the pipe.

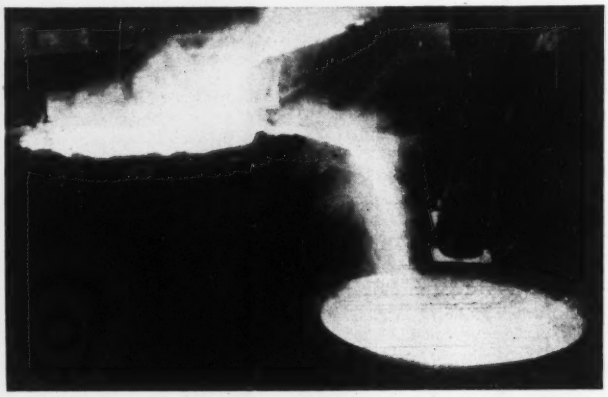
Mining—An American company with mining operations abroad said it could step up deliveries of strategic metal to the U. S. if it had equipment. Machines were diverted to this foreign operation from U. S. customers that had ordered them.

Community facilities—Directives have been used to get needed materials for housing near military installations, for equipment to expand water and sewage systems.

NPA officials expect to use such directives more and more until the CMP program really operates smoothly—and that's six or nine months off. "There's going to be a lot of patchwork and playing by ear", one high official admits, "while we's shifting over from one system to another."

Where do you go if you want this kind of help?

First stop is the nearest office of NPA. You should get a good idea there of your chances.



STEEL IS HOT, and for some the trickle becomes smaller as more and more is drained into defense. Manufacturers and builders alike are going to be needing extra governmental priorities to get steel for vital jobs. If readers have DO-itis—DO's without the goods they speak for—maybe they need a specific.

Raymond MAKES 5 TYPES OF CONCRETE PILES

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3. PIPE STEP-TAPER
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5. GOW CAISSONS

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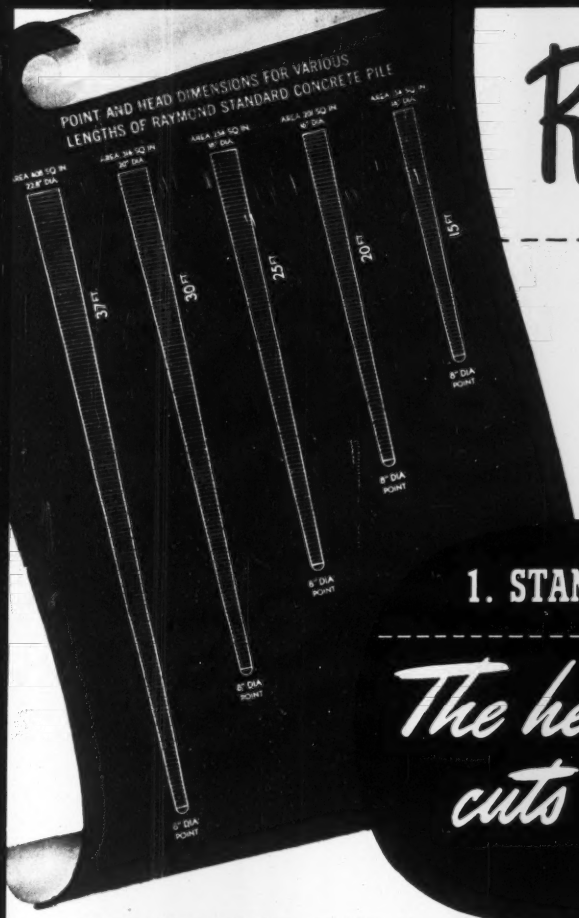

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Note that the permanent steel shell maintains the soil pressure developed during driving and while the concrete is setting, thus insuring a perfect pile free from distortion with a high load capacity.

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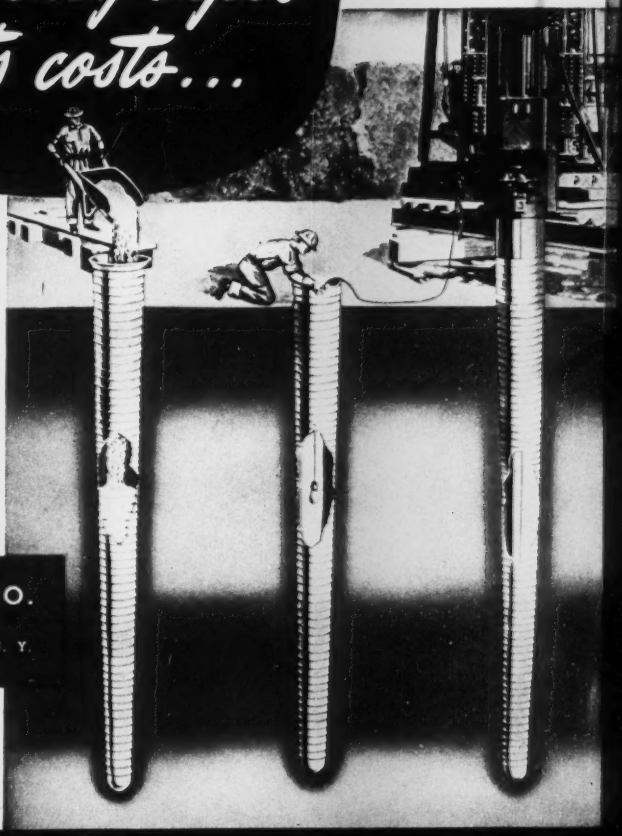
4. Since shorter piles cost less to drive, the taper usually results in substantial savings.

Each of these statements has been tested and proved innumerable times. The evidence is at your disposal at any of our offices. Your inquiry is cordially invited.



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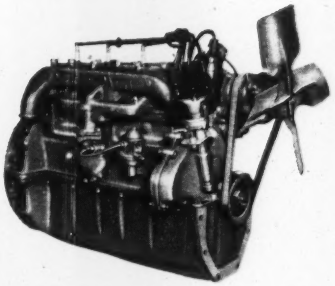

Popular wherever heavy materials must be moved and stacked, the famous **MOTOWLIFT**, made by Service Caster & Truck Corp., has long standardized on the Ford "120" Industrial Engine plus additional Ford mobile parts and components.

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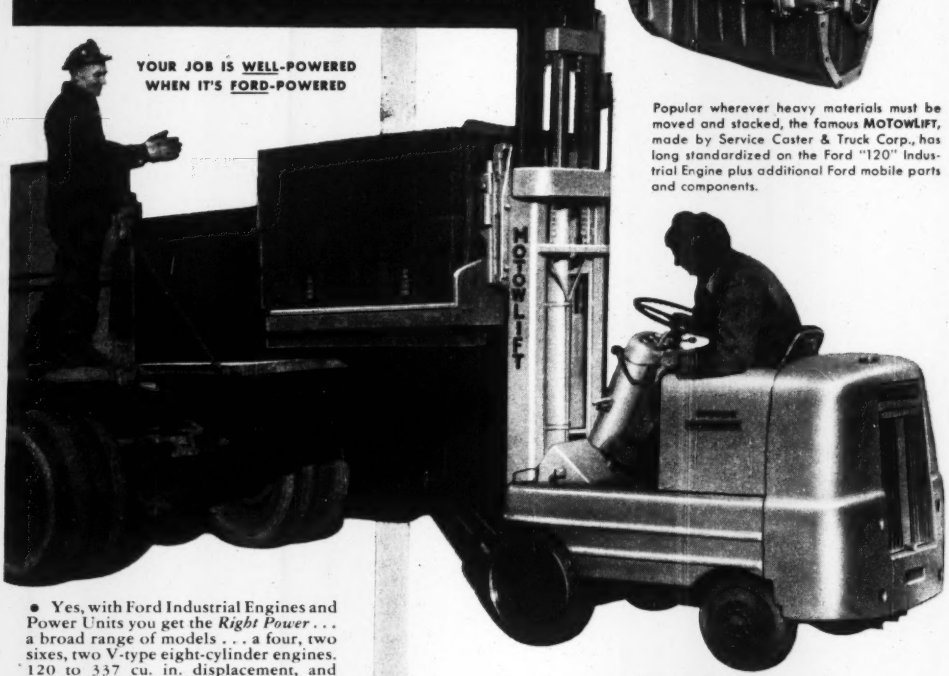

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